

GREENHOUSE GAS EMISSIONS STUDY

West Valley Connector Project



cta

San Bernardino County
Transportation Authority



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April 2018



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Appendix A – Greenhouse Gas Calculations

LIST OF ACRONYMS

°F	Fahrenheit
AB	Assembly Bill
APTA	American Public Transportation Association
ADA	Americans with Disabilities Act
BRT	Bus Rapid Transit
Cal/EPA	California Environmental Protection Agency
CALGreen	Green Building Standards Code
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CAT	Climate Action Team
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CH ₄	Methane
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
CPUC	California Public Utilities Commission
EA	Environmental Assessment
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
FTA	Federal Transit Administration
GHG	Greenhouse Gas
GWP	Global Warming Potential

IPCC Intergovernmental Panel on Climate Change

LEV Low Emission Vehicle

Metro Los Angeles County Metropolitan Transportation Authority

mpg miles per gallon

N₂O Nitrous Oxide

NEPA National Environmental Policy Act

OPR Office of Planning and Research

RCEM Road Construction Emissions Model

RCEM Road Construction Emissions Model

RTP Regional Transportation Plan

SB Senate Bill

SBCOG San Bernardino Council of Governments

SBCTA San Bernardino County Transportation Authority

SCAG Southern California Association of Governments

SCAQMD South Coast Air Quality Management District

SCS Sustainable Communities Strategies

VMT Vehicle Miles Traveled

EXECUTIVE SUMMARY

The Greenhouse Gas (GHG) Emissions Study was prepared in compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The analysis quantified construction and operational emissions and assessed consistency with GHG reduction plans. The proposed West Valley Connector Bus Rapid Transit (BRT) project (the project) is a mass transit system that is consistent with State and regional policies to reduce GHG emissions.

GHG emissions were quantified for the existing condition (2016), opening year (2023), and design year (2040). When compared to the CEQA baseline of 2016, the Build Alternatives would generate substantially less GHG emissions in 2023 and 2040, because exhaust emissions decrease in future years as the vehicle fleet continues to turn over to newer, more efficient vehicles and emission standards become more stringent. When comparing Build to No Build Alternative emissions, GHG emissions would increase marginally in 2023 and increase by a maximum of 0.08 percent in 2040. The slight increase in emissions would be related to increased regional truck vehicles miles traveled (VMT). The truck VMT increase offsets the regional reduction in passenger vehicle VMT.

No significant impacts have been identified under CEQA and no adverse effects have been identified under NEPA. No mitigation or control measures are necessary to reduce GHG emissions.

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1.0 INTRODUCTION

This GHG Emissions Study analyzes the potential environmental impacts related to GHG emissions along the West Valley Connector (WVC) Project (the WVC Project or the proposed project). The objectives of this analysis are to describe the regulatory setting, affected environment, impacts on regional GHG emissions that would result from implementation of the project, and mitigation measures that would reduce these impacts.

The San Bernardino County Transportation Authority (SBCTA), in cooperation with the cities of Pomona, Montclair, Ontario, Rancho Cucamonga, and Fontana, proposes construction of the WVC Project, a 35-mile-long Bus Rapid Transit (BRT) project that will decrease travel times and improve the existing public transit system within the corridor.

In January 2017, SBCTA entered into a cooperative agreement with Omnitrans designating SBCTA as the lead agency for the proposed WVC Project. SBCTA intends to construct the WVC, which will then be operated by Omnitrans. SBCTA has the authority to allocate Federal Transit Administration (FTA) funds; however, it does not have the ability to receive funds directly from FTA. Omnitrans is the direct FTA grantee for the San Bernardino Valley. As a result, SBCTA and Omnitrans have developed a successful direct recipient/subrecipient working relationship to deliver projects with FTA funds. The current relationship allows the delivery of FTA-funded projects that meet FTA requirements without duplicating staff, assuring the best use of limited public funds available. Omnitrans and SBCTA executed Memorandum of Understanding (MOU) 15-1001289 in October 2015, setting forth the roles and responsibilities of the recipient/subrecipient relationship.

The project is subject to state and federal environmental review requirements because it involves the use of federal funds from the Federal Transit Administration (FTA). An Environmental Impact Report (EIR)/Environmental Assessment (EA) has been prepared for the proposed project in compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). SBCTA is the CEQA lead agency, and FTA is the NEPA lead agency. This GHG Emissions Study has been prepared as part of the technical analysis required to support the EIR/EA.

1.1 Project Location and Setting

The proposed project is located primarily along Holt Avenue/Boulevard and Foothill Boulevard, which would connect the cities of Pomona, Montclair, Ontario, Rancho Cucamonga, and Fontana in the counties of Los Angeles and San Bernardino, California. The project limits extend from Main Street in the City of Pomona on the west side to Sierra Avenue in the City of Fontana on the east side and Church Street in the City of Rancho Cucamonga on the north side to Ontario International Airport on the south side (see Figures 1-1 and 1-2). The proposed project area is primarily urban, and generalized land

uses include low-, medium-, and medium-high-density residential, commercial, industrial, open space and recreation, transportation and utilities, agriculture, vacant, public facilities, airport, educational facilities, and offices.

1.2 Purpose and Need

The purpose of the proposed project is to improve corridor mobility and transit efficiency in the western San Bernardino Valley from the City of Pomona, in Los Angeles County, to the City of Fontana, in San Bernardino County, with an enhanced, state-of-the-art BRT system (i.e., the system that includes off-board fare vending, all-door boarding, transit signal priority [TSP], optimized operating plans, and stations that consist of a branded shelter/canopy, security cameras, benches, lighting, and variable message signs).

The proposed project would address the growing traffic congestion and travel demands of the nearly one million people that would be added to Los Angeles and San Bernardino County by 2040 per Southern California Association of Government's (SCAG) 2016 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS) growth forecast. Improved rapid transit along the project corridor would help Omnitrans/SBCTA achieve its long-range goals to cost effectively enhance lifeline mobility and accessibility, improve transit operations, increase ridership, support economic growth and redevelopment, conserve nonrenewable resources, and improve corridor safety.

Recognizing the importance of the WVC transit corridor, SBCTA is proposing a project that is designed to achieve the following objectives:

- Improve transit service by better accommodating high existing bus ridership.
- Improve ridership by providing a viable and competitive transit alternative to the automobile.
- Improve efficiency of transit service delivery while lowering Omnitrans' operating costs per rider.
- Support local and regional planning goals to organize development along transit corridors and around transit stations.

The project purpose and objectives stated above would respond to the following needs:

- Current and future population and employment conditions establish a need for higher-quality transit service.
- Current and future transportation conditions establish a need for an improved transit system.
- Transit-related opportunities exist in the project area.

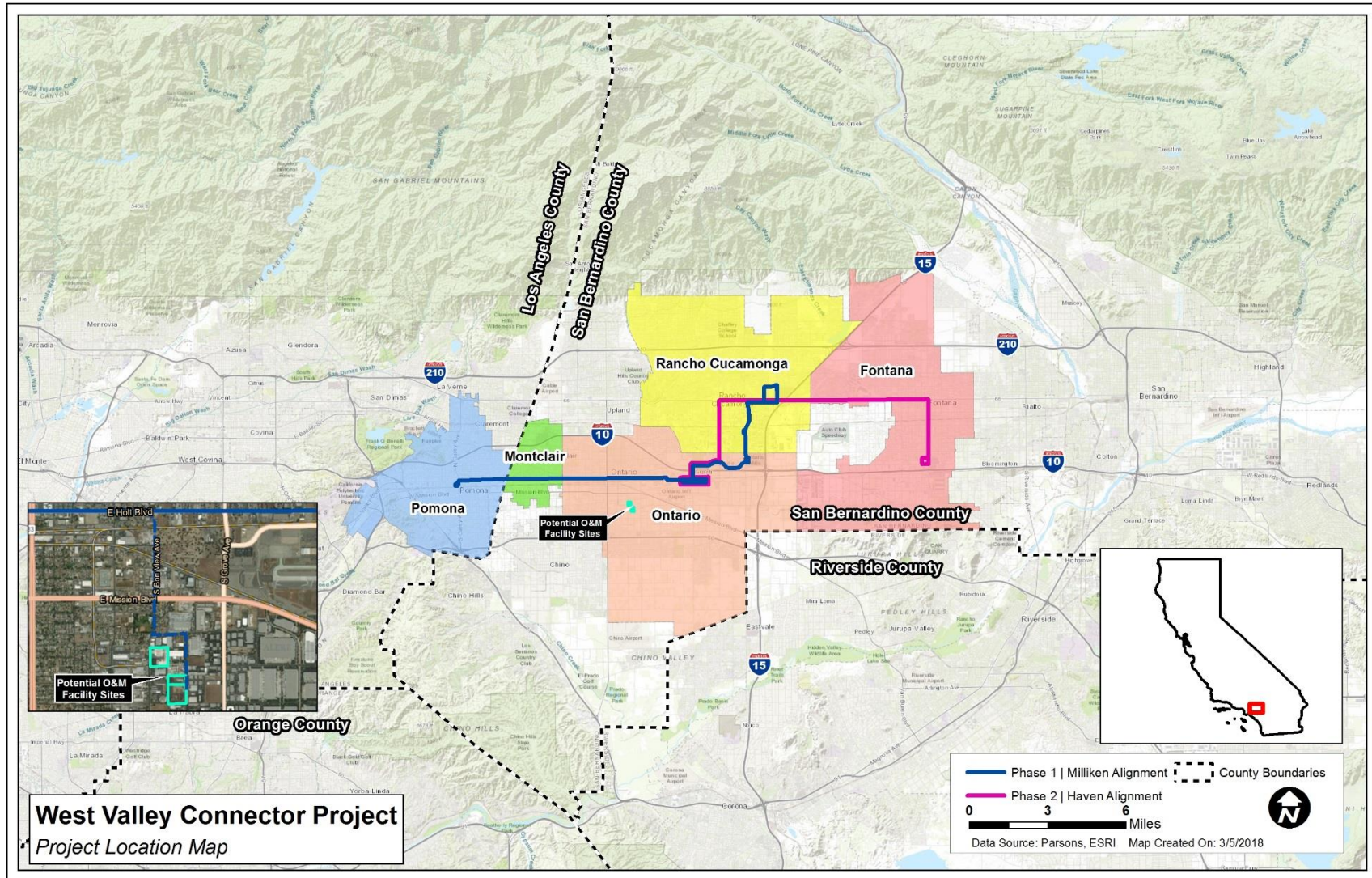


Figure 1-1: Project Location Map

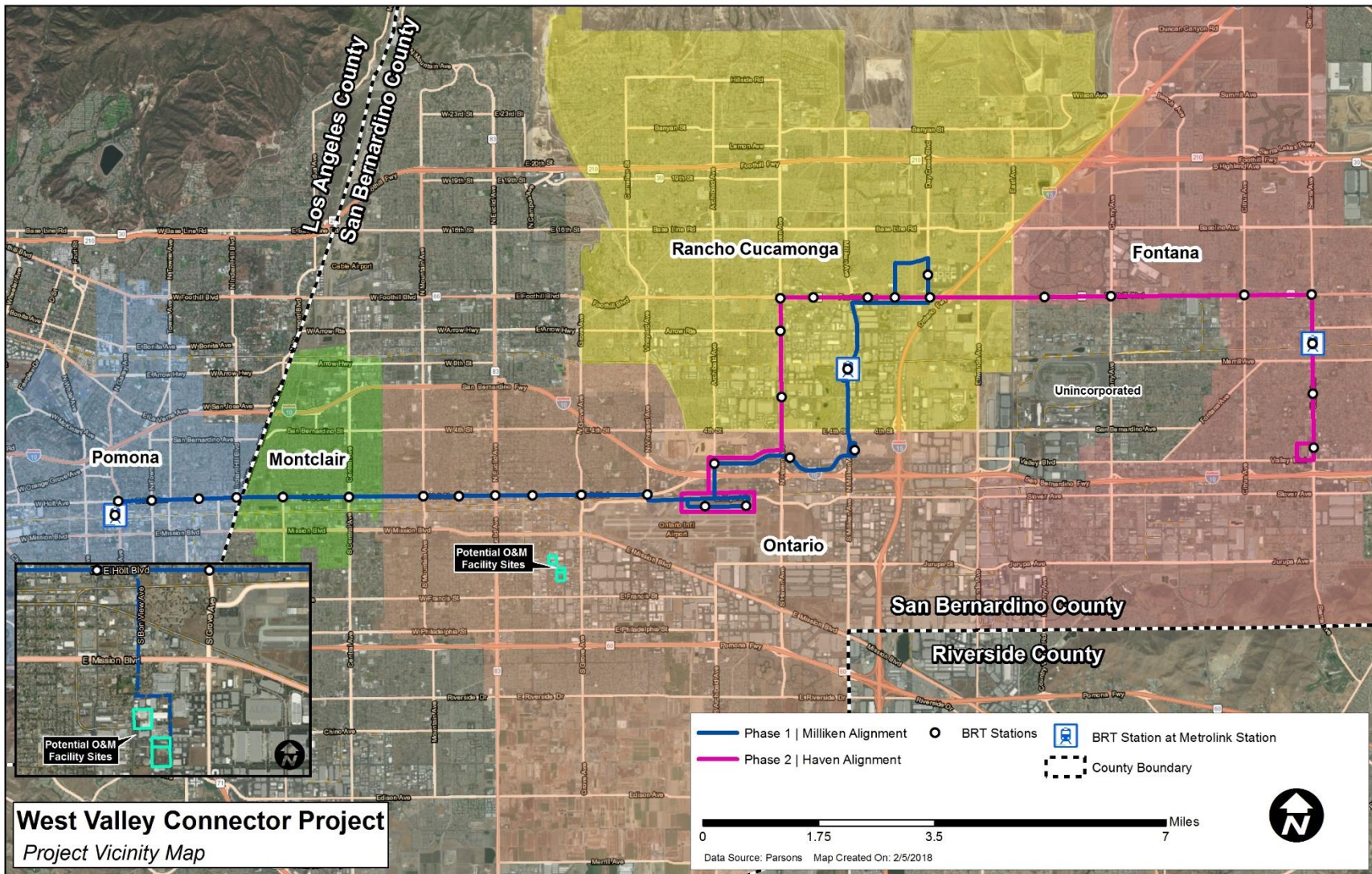


Figure 1-2: Project Vicinity Map

2.0 PROJECT DESCRIPTION

2.1 Proposed Project

The WVC Project is a 35-mile-long BRT corridor project located primarily along Holt Avenue/Boulevard and Foothill Boulevard that would connect the cities of Pomona, Montclair, Ontario, Rancho Cucamonga, and Fontana in the counties of Los Angeles and San Bernardino, California. The project proposes limited stops, providing speed and quality improvements to the public transit system within the corridor. The project includes BRT stations at up to 33 locations/major intersections and associated improvements, premium transit service, TSP and queue jump lanes, dedicated lanes, and integration with other bus routes.

The project alignment consists of two phases. Phase I of the project would construct the “Milliken Alignment,” from the Pomona Regional Transit Center (downtown Pomona Metrolink Station) to Victoria Gardens in Rancho Cucamonga. Phase II of the project would construct the “Haven Alignment,” from Ontario International Airport to Kaiser Permanente Medical Center in Fontana. The Phase I/Milliken Alignment would begin construction in 2020 and is proposed to have 10-minute peak and 15-minute off-peak headways. Phase II is intended to be constructed immediately following completion of Phase I, depending on the availability of funding.

Phase I/Milliken Alignment

Phase I of the project would construct the Milliken Alignment from the western city boundary limit of Pomona to Victoria Gardens in Rancho Cucamonga. In Pomona, the alignment starts from the Pomona Regional Transit Center station, travels along Holt Avenue and into Montclair.

In Montclair, the alignment runs on Holt Boulevard between Mills Avenue and Benson Avenue and into Ontario.

In Ontario, the alignment continues on Holt Boulevard, starting from Benson Avenue, and then continues to Vineyard Avenue and into Ontario International Airport (loop through Terminal Way). From the airport, it heads north on Archibald Avenue to Inland Empire Boulevard and turns right and travels east on Inland Empire Boulevard.

On Inland Empire Boulevard, the alignment goes straight into Ontario Mills (loop through Mills Circle) and then heads north on Milliken Avenue into Rancho Cucamonga.

In Rancho Cucamonga, the alignment makes a loop into the Rancho Cucamonga Metrolink Station off Milliken Avenue and then continues up Milliken Avenue and turns east onto Foothill Boulevard.

The alignment continues east on Foothill Boulevard, turns north onto Day Creek Boulevard, and then terminates with a layover at Victoria Gardens at Main Street. From Victoria Gardens, the bus line begins a return route by continuing north on Day Creek Boulevard, turns west onto Church Street, turns south onto Rochester Avenue, and then turns west back onto Foothill Boulevard.

Phase II/Haven Alignment

Phase II of the project would construct the Haven Alignment, from Ontario International Airport to Kaiser Permanente Medical Center in Fontana. In Ontario, the alignment makes a loop through Terminal Way at Ontario International Airport. From the airport, it heads north on Archibald Avenue to Inland Empire Boulevard and turns right and travels east on Inland Empire Boulevard.

From Inland Empire Boulevard, the alignment turns left to go north up Haven Avenue into Rancho Cucamonga, then turns right to go east onto Foothill Boulevard and into Fontana.

In Fontana, the alignment continues east on Foothill Boulevard until turning south onto Sierra Avenue. The alignment follows Sierra Avenue, including a stop at the Fontana Metrolink Station, and then continues until turning west onto Marygold Avenue, where the bus line would begin a turn-around movement by heading south onto Juniper Avenue, east onto Valley Boulevard, and north back onto Sierra Avenue to Kaiser Permanente Medical Center before heading northward for the return trip.

2.2 Project Alternatives

Many alternatives were considered during the project development phase of the project. A No Build Alternative and two build alternatives (Alternatives A and B) are being analyzed in the EIR/EA.

2.2.1 No Build Alternative

The No Build Alternative proposes no improvements to the existing local bus services. Under the No Build Alternative, the existing local bus service on Routes 61 and 66 would maintain current service of 15-minute headways (total of four buses per hour in each direction).

2.2.2 Build Alternatives

Figure 2-1 presents the map of both build alternatives. All design features of both build alternatives are the same, as described in more details in Section 2.3, with the exception of the following:

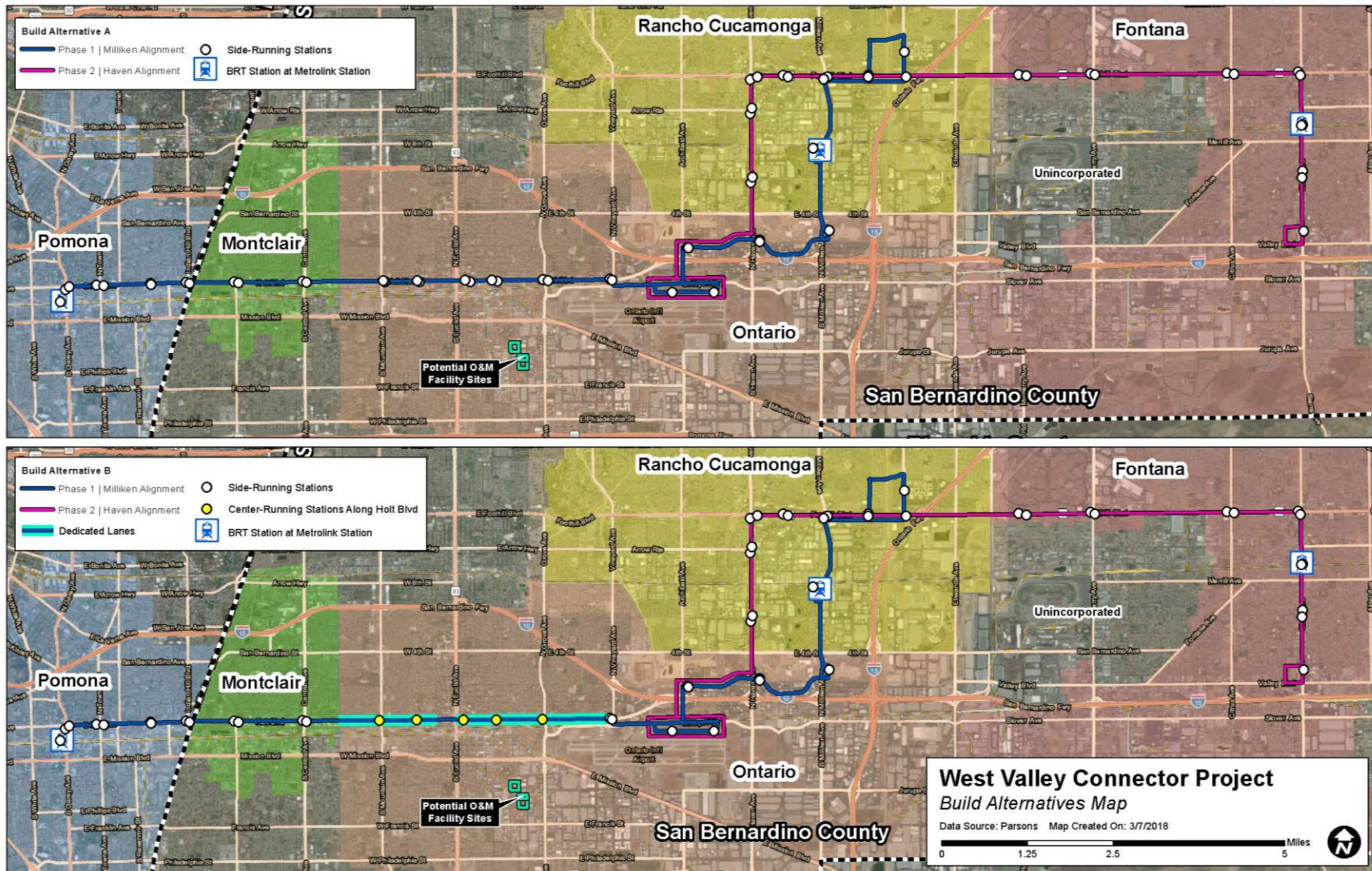


Figure 2-1: Build Alternatives Map

Alternative A – Full BRT with no Dedicated Bus-only Lanes

Alternative A would include the 35-mile-long BRT corridor, which is comprised of the Phase I/Milliken Alignment, Phase II/ Haven Alignment, and 60 side-running stations at up to 33 locations/major intersections. The BRT buses will operate entirely in the mixed-flow lanes. The right-of-way (ROW) limits and travel lane width vary in other segments of the corridor. Implementation of Build Alternative A will not require permanent or temporary ROW acquisition.

Alternative B – Full BRT with 3.5 miles of Dedicated Bus-only Lanes in Ontario

Alternative B would include the full 35-mile-long BRT corridor, which is comprised of the Phase I/Milliken Alignment, Phase II/Haven Alignment, 3.5 miles of dedicated bus-only lanes, and five center-running stations and 50 side-running stations at up to 33 locations/major intersections. The dedicated lanes segment would include two mixed-flow lanes and one transit lane in each direction and five center-running stations. To accommodate the dedicated lanes, roadway widening and additional utilities, such as electrical and fiber-optic lines, would require permanent and temporary ROW acquisition. In addition, some areas of the project corridor would require reconfiguration, relocation, or extension of adjacent driveways, curbs, medians, sidewalks, parking lots, and local bus stops.

2.3 Design Features of Build Alternatives

2.3.1 Bus Rapid Transit Stations

BRT stations at 33 locations/major intersections and associated improvements are proposed to be located approximately 0.5 to 1 mile apart to facilitate higher operating speeds by reducing dwell time (see Figure 1-2 and Figure 2-1 for station locations). Table 2-1 lists the BRT stations to be constructed as part of Phase I/Milliken Alignment. Note that under Alternative A, all 21 stations will be side-running stations. Under Alternative B, five center platform stations are proposed as follows:

- Holt Boulevard/Mountain Avenue
- Holt Boulevard/San Antonio Avenue
- Holt Boulevard/Euclid Avenue
- Holt Boulevard/Campus Avenue
- Holt Boulevard/Grove Avenue

As part of Phase II/Haven Alignment, an additional 12 side-running stations will be constructed for both build alternatives as list in Table 2-2.

Table 2-1: Stations along Phase I/Milliken Alignment

City	Stations
Pomona	• Pomona Regional Transit Center Station • Holt Avenue/Garey Avenue • Holt Avenue/Towne Avenue • Holt Avenue/Clark Avenue • Holt Avenue/Indian Hill Boulevard
Montclair	• Holt Boulevard/Ramona Avenue • Holt Boulevard/Central Avenue
Ontario	• Holt Boulevard/Mountain Avenue* • Holt Boulevard/San Antonio Avenue* • Holt Boulevard/Euclid Avenue* • Holt Boulevard/Campus Avenue* • Holt Boulevard/Grove Avenue* • Holt Boulevard/Vineyard Avenue • Ontario International Airport • Inland Empire Boulevard/Archibald Way • Inland Empire Boulevard/Porsche Way • Ontario Mills
Rancho Cucamonga	• Rancho Cucamonga Metrolink Station • Foothill Boulevard/Milliken Avenue • Foothill Boulevard/Rochester Avenue • Victoria Gardens between North and South Main Street
Note: * denotes the center-running stations to be constructed under Alternative B.	

Source: Parsons, 2017

Table 2-2: Additional Stations to be Constructed as Part of Phase II/Haven Alignment

City	Stations
Rancho Cucamonga	• Haven Avenue/6th Street • Haven Avenue/Arrow Route • Haven Avenue/Foothill Boulevard • Foothill Boulevard/Spruce Avenue • Foothill Boulevard/Day Creek Boulevard
Fontana	• Foothill Boulevard/Mulberry Avenue • Foothill Boulevard/Cherry Avenue • Foothill Boulevard/Citrus Avenue • Foothill Boulevard/Sierra Avenue • Fontana Metrolink Station • Sierra Avenue/Randall Avenue • Sierra Avenue/Kaiser Permanente

Source: Parsons, 2017

Side-Running Stations

Side-running stations would typically be located on the far side of an intersection to facilitate transit priority and to avoid a stopped bus from blocking those turning right from the corridor.

Where curb cuts for driveways and other conditions do not provide enough space along the curbside for both the San Bernardino Valley Express (sbX) and the local bus on the far side of the intersection, the local buses would be located on the near side of the intersection.

In the side-running condition, stations may include new or improved shelters with passenger amenities, or only an sbX-branded pylon with signature light. Proposed shelters would be approximately 18 feet in length and a width that would fit a 10-foot-wide-minimum sidewalk. Passenger amenities at the side platform stations would include benches, bicycle racks, trash receptacles, variable message signs, security cameras, and lighting integrated with the shelter. There would be no fare collection equipment on the sidewalks or shelters when the available ROW is less than 10 feet, and the passengers may pay the fee on the bus. Side-running stations would also include various amenities.

For all stations in Rancho Cucamonga, only an sbX-branded pylon with signature light is proposed. Should shelters be implemented in the future, coordination between the City of Rancho Cucamonga and SBCTA would be required to environmentally clear the shelters at a later time.

Center Platform Stations

As indicated in Section 2.3.1, five center-running platform stations are proposed to be constructed as part of the Phase I/Milliken Alignment (in Ontario) under Alternative B.

The center-running platform stations would be in the center of the street ROW on a raised platform with an end-block crossing. Access would be provided by crosswalks at intersections and Americans with Disabilities Act (ADA)-compliant ramps to the station platforms. Center-running platforms would be placed as close to the intersection as possible while still maintaining left-turn pockets, where required.

In the optimum center-running platform configuration, the platform would accommodate a canopy with its seating area, passenger amenities, fare equipment, and a ramp to comply with relevant accessibility requirements and provide clearance in front of ticket vending machines. Stations would include amenities that can be assembled and laid out to suit the functionality of the station and fit with the surrounding land uses.

2.3.2 sbX Bus Operations

The proposed project would require 18 buses during the Phase I operation and increase to 27 buses for the Phase I and Phase II operation to serve the designed headways and have sufficient spare vehicles.

Under Alternative A, sbX buses would operate entirely in mixed-flow lanes along the proposed 35 miles of the Phase I and Phase II alignments. For Alternative B, sbX buses would operate in mixed-flow lanes similar to Alternative A, except where dedicated bus-only

lanes (3.5 miles) are proposed along Holt Boulevard, between Benson Avenue and Vine Avenue and between Euclid Avenue and Vineyard Avenue, in Ontario.

Roadway sections where the sbX would operate in mixed-flow lanes would generally be kept as existing conditions, although some modifications, such as relocated curb and gutter, may be necessary near the stations to provide sufficient room for bus stopping and loading. Reconstruction of curb and gutters would only be required for the segment where dedicated bus-only lanes are proposed. Vehicular lanes where the sbX buses would operate in dedicated bus-only lanes would feature concrete roadways, painted or striped to visually separate the exclusive lanes from mixed-flow lanes. Transition areas from mixed-flow to exclusive lanes would be provided at each end of an exclusive lane location. Such transitions would be clearly marked to separate bus movements from other vehicular traffic. Reinforced concrete bus pad in the pavement would be placed at all station locations for the sbX buses.

sbX buses would operate from 6:00 a.m. to 8:00 p.m. with peak headways for 4 hours and off-peak headways for 10 hours per day for a total span of service of 14 hours per day, Monday through Friday. From the Pomona Metrolink Transit Center station to Inland Empire Boulevard, the sbX buses would operate on 10-minute peak headways and 15-minute off-peak headways. Additional service hours, including weekend service, may be added if additional operating funds become available in the future.

2.3.3 Operations and Maintenance

Fleet Composition

The proposed project's fleet would be comprised of 60-foot-long articulated compressed natural gas (CNG) propulsion buses. sbX buses would hold approximately 96 passengers at maximum capacity with up to 8 bicycles on board. Today, the average local bus operating speeds are only 12 to 15 miles per hour (mph), and they are getting slower as corridor congestion worsens. In calculating run times, it was assumed that the average dwell time at stations would be 30 seconds (peak service), and average overall speed would be 20 mph.

Maintenance Requirements and Associated Facilities

Omnitrans operates and maintains its existing bus fleets from two major Operations and Maintenance (O&M) facilities: East Valley Vehicle Maintenance Facility (EVVMF), located at 1700 W. 5th Street in the City of San Bernardino and West Valley Vehicle Maintenance Facility (WVVMF), located at 4748 E. Arrow Highway in the City of Montclair. EVVMF is a Level III facility capable of full maintenance of buses and WVVMF is a Level II facility suitable for light maintenance. Neither facility has sufficient capacity to accommodate the additional maintenance and storage requirements of the bus fleet associated with the proposed WVC Project.

The purpose of the new O&M facility is to provide operations and maintenance support to the existing full-service EVVMF. The new facility would be designed and constructed to provide Level I service maintenance with a capacity to be upgraded to provide Level II service maintenance. Heavy repair functions and administrative functions would remain exclusively with the EVVMF in San Bernardino.

Facility Components

Conceptually, the new O&M facility would be built on an approximate 5-acre site. The Level I facility would include a parking area, bus washing area, fueling area, and a personnel and storage building. As needs arise, the facility could be upgraded to provide Level II service, which will include the addition of a maintenance shop and a larger administrative building. Landscaping and irrigation would be provided to enhance the comfort of employees and the appearance of the facility, and to help screen maintenance facilities and operations from offsite viewpoints within the community. Figure 2-2 shows the conceptual site plan of the Level II facility.

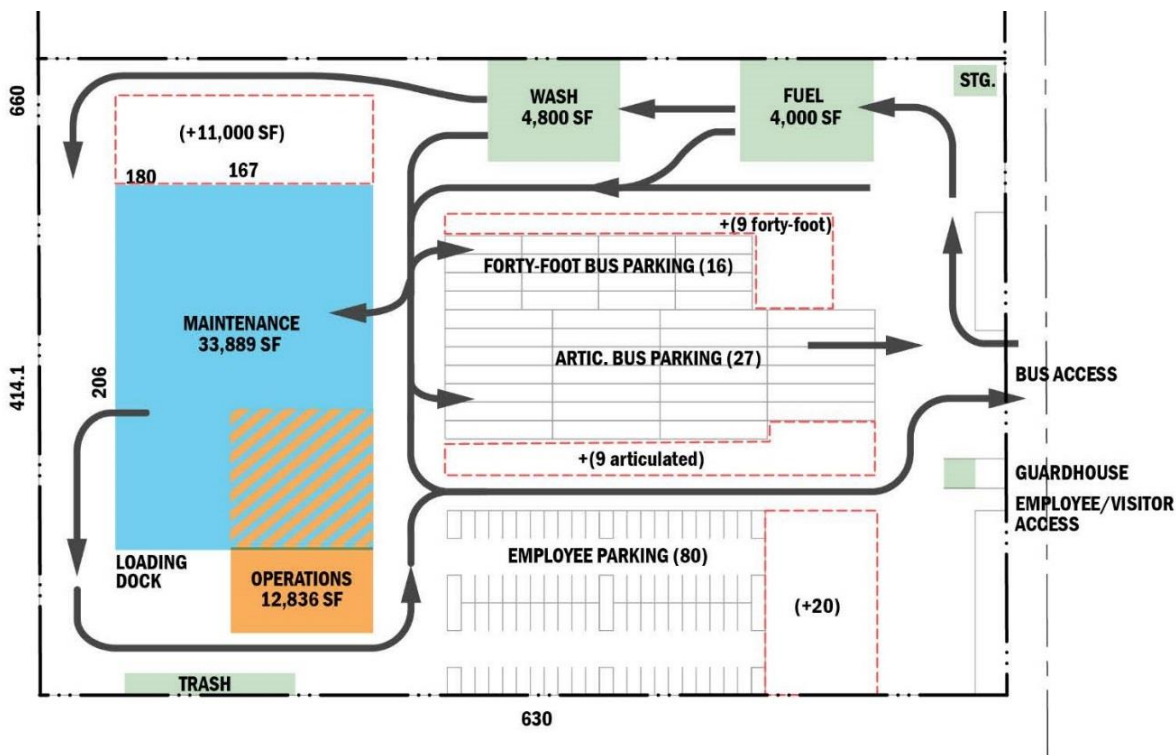


Figure 2-2: O&M Facility Conceptual Site Plan

Depending on the service level to be performed, approximately 50-100 staff would be using this facility including bus operators and O&M staff.

Potential Sites

Three sites are being considered for the placement of the new O&M facility (see Figure 2-3). All are owned by the City of Ontario and are located in the industrial zoned area, slightly more than a mile from the proposed BRT corridor alignment on Holt Boulevard:

- Site 1: 1516 S. Cucamonga Avenue, Ontario (APN 1050-131-03-0000 and APN 1050-131-02-0000). The current use of this property is public works storage yard. If selected, the O&M facility will be built at the bottom portion of the parcel encompassing an area of approximately 6.0 acres.
- Site 2: 1440 S. Cucamonga Avenue, Ontario (APN 1050-141-07-0000). The current use of this property is compressed natural gas fueling station. If selected, the O&M facility will utilize the entire parcel encompassing an area of approximately 4.8 acres.
- Site 3: 1333 S. Bon View Avenue, Ontario (APN 1049-421-01-0000 and APN 1049-421-02-0000). The current use of this property is municipal utility and customer service center. If selected, the O&M facility will be built at the bottom portion of the parcel encompassing an area of approximately 6.6 acres.

Buses coming to and from the new facility could use nearby access roads that directly connect to the BRT corridor such as South Campus Avenue, South Bon View Avenue, and South Grove Avenue.

The O&M facility will be constructed during the same period as the Phase I/Milliken Alignment and would be open for operation at the same time as the Phase I alignment. Construction duration is estimated at 12 months.

2.4 Implementation Schedule

Implementation of the proposed project is planned over the next 5 years and would entail many activities, including:

- Completion of the environmental compliance phase (December 2018)
- Completion of Preliminary Engineering (December 2018)
- Completion of Final Design (April 2020)
- Completion of O&M facility (December 2022)
- Completion of Construction of Phase I/Milliken Alignment and testing (January 2023)
- System operation (begin revenue operation in January 2023)
- Construction of Phase II/Haven Alignment is scheduled to occur after completion of the Phase I/Milliken Alignment pending funding availability

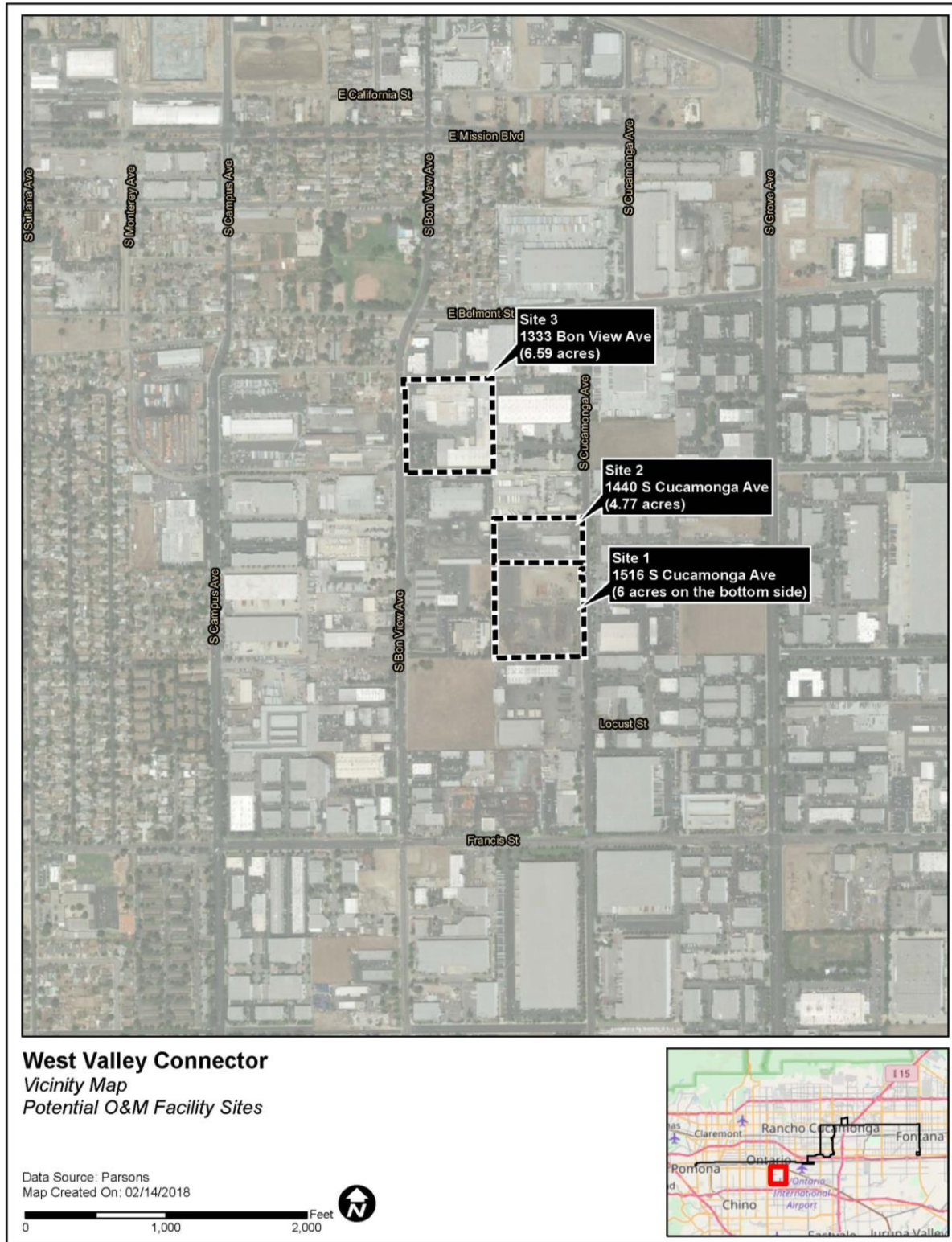


Figure 2-3: Potential Operations and Maintenance Facility Sites

3.0 REGULATORY FRAMEWORK

Understanding the relevant Regulatory Framework requires an introduction to GHG emissions. GHGs refer to a group of chemical compounds that are generally believed to affect global climate conditions. The greenhouse effect is a concept in atmospheric science that describes the process by which certain atmospheric gases—GHGs—absorb energy from sunlight within the Earth’s atmosphere and prevent it from being released back into space. This mechanism is responsible for maintaining a warm, habitable environment on the planet’s surface based on the equilibrium concentrations of the gases. GHGs such as carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) keep the average surface temperature of the Earth close to 60 degrees Fahrenheit (°F).

For each GHG, a global warming potential (GWP) has been calculated to reflect the atmospheric residence time and how strongly it absorbs energy relative to CO₂ on a per-kilogram basis. GWP is a metric that indicates the relative climate forcing of a kilogram of emissions when averaged over the period of interest. Both 20-year and 100-year horizons are used for the GWPs in Table 3-1. To account for this higher potential, emissions of other GHGs are frequently expressed in the equivalent mass of CO₂, denoted as CO₂e.

Table 3-1: Global Warming Potential for Selected Greenhouse Gases

Pollutant	Lifetime (Years)	Global Warming Potential (20-Year)	Global Warming Potential (100-Year)
Carbon Dioxide	--	1	1
Methane	12	21	25
Nitrous Oxide	114	310	298
Nitrogen Trifluoride	740	Unknown	17,200
Sulfur Hexafluoride	3,200	23,900	22,800
Perfluorocarbons	2,600-50,000	6,500-9,200	7,390-12,200
Hydrofluorocarbons	1-270	140-11,700	124-14,800

CARB, *Global Warming Potentials*, website:

<http://www.arb.ca.gov/cc/inventory/background/gwp.htm#transition>, accessed on July 25, 2016

Long-term and irrevocable shifts in weather, including temperature, precipitation, and seasonal patterns are referred to as climate change. According to the Intergovernmental Panel on Climate Change (IPCC), climate change caused by GHG emissions is anticipated to result in sea-level rise, climate-related hazards, extinction of species, species migration, reduced food production, exacerbated health problems, slower economic growth, and

displacement of people.¹ Some of the possible effects of climate change along the California Coast include:

- Sea-level rise that threatens coastal wetlands, infrastructure, and property.
- Increased storm activity, together with sea-level rise, could increase beach erosion and cliff undercutting.
- Warmer temperatures and more frequent storms due to El Niño that bring more rain instead of snow to the Sierra Nevada Mountains, reducing the supply of water for summer needs.
- Decreased summer runoff and warming ocean temperatures that affect salinity, water circulation, and nutrients in the Pacific Ocean, possibly leading to complex changes in marine life.

3.1 International

3.1.1 United States and China Climate Agreement

In November 2014, the United States and China made a joint announcement to cooperate on combating climate change and promoting clean energy. Together, the United States and China have agreed to: expand joint clean energy research and development at the U.S.-China Clean Energy Research Center, advance major carbon capture, use and storage demonstrations, enhance cooperation on hydrofluorocarbons, launch a climate-smart/low-carbon cities initiative, promote trade in green goods, and demonstrate clean energy on the ground.² President Trump has not withdrawn the United States from this Agreement.

3.1.2 Paris United Nations Framework Convention on Climate Change

A new international climate change agreement was adopted at the Paris United Nations Framework Convention on Climate Change climate conference in December 2015. However, President Trump has stated that the United States will withdrawal from the Paris Climate Accord. The official exit from the Accord cannot happen until November 4, 2020.

3.1.3 North American Climate, Clean Energy, and Environment Partnership Action Plan

The North American Climate, Clean Energy, and Environment Partnership Action Plan was announced by Prime Minister Justin Trudeau, President Barack Obama, and President Enrique Peña Nieto on June 29, 2016, at the North American Leaders Summit in Ottawa, Canada. This Action Plan identifies the deliverables to be achieved and activities to be pursued by the three countries as part of this enduring Partnership. President Trump has not withdrawn the United States from this Action Plan.

¹ IPCC, Fifth Assessment Report, 2014.

² The White House, U.S.-China Joint Announcement on Climate Change and Clean Energy Cooperation, November 11, 2014.

3.2 Federal

3.2.1 United States Supreme Court

The United States Supreme Court ruled in *Massachusetts v. Environmental Protection Agency*, 127 S.Ct. 1438, that CO₂ and other GHGs are pollutants under the Federal Clean Air Act, which the U.S. Environmental Protection Agency (EPA) must regulate if it determines they pose an endangerment to public health or welfare. On December 7, 2009, the EPA made two distinct findings: 1) that the current and projected concentrations of the six key GHGs (CO₂, CH₄, N₂O, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride) in the atmosphere threaten the public health and welfare of current and future generations; and 2) that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

3.2.2 Fuel Efficiency Standards

On May 19, 2009, the federal government announced a new National Fuel Efficiency Policy aimed at increasing fuel economy and reducing GHG pollution. The new National Fuel Efficiency Policy is expected to increase fuel economy by more than 5 percent by requiring a fleet-wide average of 35.5 miles per gallon (mpg) by 2016 starting with model years 2012 (Executive Office of the President, 2009). In 2012, the federal government announced new fuel efficiency standards for cars and light-duty trucks by the model year 2025. This expands on the previous policy to further increase fuel economy to 54.5 mpg and reduce GHG emissions by 6 million metric tons.³

3.2.3 Climate Action Plan

On June 25, 2013, President Barack Obama issued a Climate Action Plan.⁴ The three main goals were to cut carbon pollution, prepare the United States for the impacts of climate change, and lead international efforts to combat global climate change and prepare for its impacts. President Trump has rescinded the Climate Action Plan.

3.2.4 American Public Transportation Association

The American Public Transportation Association (APTA) prepared a report in 2009 titled *Recommended Practice for Quantifying Greenhouse Gas Emissions from Transit*. The report provides guidance to transit agencies for quantifying GHG emissions, including both emissions generated by transit and the potential reduction of emissions through efficiency and displacement by laying out a standard methodology for transit agencies to report their greenhouse gas emissions in a transparent, consistent and cost-effective manner. The report was designed to ensure that agencies can provide an accurate public record of their

³ Executive Office of the President, National Fuel Efficiency Policy, May 19, 2009.

⁴ Executive Office of the President, The President's Climate Action Plan, June 2013.

emissions; and was intended to help agencies comply with future State and federal legal requirements and potentially gain credit for their early actions to reduce emissions.⁵

3.2.5 Federal Transit Administration

The FTA has implemented a Climate Change Adaptation Initiative program to investigate potential strategies for reducing climate impacts from transit. The program conducted seven climate adaptation pilot studies to increase knowledge of how transit agencies can adapt to climate change, advance the state of the practice in adapting transit assets and operations to the impacts of climate change, and build strategic partnerships between transit agencies and climate adaptation experts. The approach of the pilot projects involved identification of climate hazards and potential climatic events, characterization of risks on transit projects and operations, development of initial adaptation strategies and linking strategies to organizational structures. The Los Angeles County Metropolitan Transportation Authority (Metro) was selected as one of the pilot study transit systems, and a report was prepared to analyze climate adaptation opportunities, titled LACMTA Climate Change Adaptation Pilot Project Report.⁶

3.2.6 Council on Environmental Quality

The Council on Environmental Quality (CEQ) has withdrawn its final guidance on how to consider GHG emissions and the effects of climate change in NEPA reviews, a Notice of Availability for which was published on August 5, 2016 (81 FR 51866). As explained in the Notice of Availability, the withdrawn guidance was not a regulation. Pursuant to Executive Order 13783, “Promoting Energy Independence and Economic Growth,” of March 28, 2017, the guidance has been withdrawn for further consideration. The withdrawal of the guidance does not change any law, regulation, or other legally binding requirement.

3.2.7 Executive Order (EO) 13693

Executive Order (EO) 13693, Planning for Federal Sustainability in the Next Decade, revokes multiple prior EOs and memorandum, including EO 13514. The goal of EO 13693 is to maintain federal leadership in sustainability and GHG emission reductions. The new EO outlines forward-looking goals for federal agencies in the area of energy, climate change, water use, vehicle fleets, construction, and acquisition. Federal agencies must, where life-cycle cost-effective, beginning in 2016 do the following.

- Reduce agency building energy intensity (as measured in British thermal units per square foot) by 2.5 percent annually through 2025.
- Improve data center energy efficiency at agency buildings.

⁵ APTA, Recommended Practice for Quantifying Greenhouse Gas Emissions from Transit, August 2009.

⁶ FTA, Transit and Climate Change Adaptation: Synthesis of FTA-Funded Pilot Projects, August 2014.

- Ensure a minimum percentage of total building electric and thermal energy is from clean energy sources.
- Improve agency water use efficiency and management (including stormwater management).
- Improve agency fleet and vehicle efficiency and management by achieving minimum percentage GHG emission reductions.

3.3 State

California has adopted a variety of Statewide legislation to address various aspects of climate change and GHG emissions. Much of this legislation is not directed at citizens or jurisdictions specifically; rather, it establishes a broad framework for the State's long-term GHG reduction and climate change adaptation program. The governor has also issued several executive orders related to the State's evolving climate change policy. Below is a summary of GHG legislation applicable to the project.

3.3.1 Assembly Bill 32

Assembly Bill (AB) 32 requires the California Air Resources Board (CARB) to develop and enforce regulations for the reporting and verification of Statewide GHG emissions, and directs the CARB to set a GHG emission limit—based on 1990 levels—to be achieved by 2020. The bill set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner. On December 11, 2008, the CARB adopted the AB 32 Scoping Plan, which sets forth the framework for facilitating the State's goal of reducing GHG emissions to 1990 levels by 2020. The First Update of the AB 32 Scoping Plan was adopted on May 22, 2014. The 2017 Climate Change Scoping Plan was adopted on December 14, 2017 and includes strategies to meet a 2030 GHG reduction goal of 40 percent below 1990 levels (the goal set out in EO B-30-15, described below).⁷ Neither AB 32 nor the updated AB 32 Scoping Plan establishes regulations implementing the Legislature's Statewide goals for reducing GHGs at the project level.

The AB 32 Scoping Plan outlines a series of technologically feasible and cost-effective measures to reduce Statewide GHG emissions, including expanding energy efficiency programs, increasing electricity production from renewable resources (at least 33 percent of the Statewide electricity mix), increasing automobile efficiency, implementing the Low-Carbon Fuel Standard, and developing a cap-and-trade program. Multiple AB 32 Scoping Plan measures address GHG emissions from transportation fuels and energy. Together, the elements of the AB 32 Scoping Plan will ensure that overall Statewide emissions will be decreased to the extent necessary to achieve AB 32's emissions reduction goals.

⁷ CARB, California's 2017 Climate Change Scoping Plan, November 2017.

3.3.2 Assembly Bill 1493

AB 1493 makes amendments to the Clean Car Standards (Chapter 200, Statutes of 2002), also known as the “Pavley” regulations which require reductions in GHG emissions in new passenger vehicles from 2009 through 2016. These amendments are part of California’s commitment toward a nation-wide program to reduce new passenger vehicle GHGs from 2012 through 2016. The Clean Car Standards required CARB to develop and adopt standards for vehicle manufacturers to reduce GHG emissions coming from passenger vehicles and light-duty trucks at a “maximum feasible and cost effective reduction” by January 1, 2005. Pavley I took effect for model years starting in 2009 to 2016; and Pavley II, which is now referred to as “Low Emission Vehicle (LEV) III GHG,” will cover 2017 to 2025. Fleet average emission standards would reach 22 percent reduction by 2012 and 30 percent by 2016.

In January 2012, CARB adopted the Advanced Clean Cars program to extend AB 1493 through model years 2017 to 2025. This program will promote all types of clean fuel technologies such as plug-in hybrids, battery electric vehicles, compressed natural gas vehicles, and hydrogen powered vehicles while reducing smog and saving consumers’ money in fuel costs. Fuel savings may be up to 25 percent by 2025.

3.3.3 Senate Bill 375

Senate Bill (SB) 375 was enacted to reduce GHG emissions from automobiles and light trucks through integrated transportation, land use, housing and environmental planning. Under the law, Metropolitan Planning Organizations are tasked with incorporating Sustainable Communities Strategies (SCS) as an element in Regional Transportation Plans (RTPs). The SCS documents are intended to:

- Identify the general location of uses, residential densities, and building intensities within the region;
- Identify areas within the region sufficient to house all the population of the region, including all economic segments of the population, over the course of the planning period of the RTP taking into account net migration into the region, population growth, household formation and employment growth;
- Identify areas within the region sufficient to house an eight-year projection of the regional housing need for the region;
- Identify a transportation network to service the transportation needs of the region;
- Gather and consider the best practically available scientific information regarding resource areas and farmland in the region;
- Consider the State housing goals;
- Set forth a forecasted development pattern for the region, which, when integrated with the transportation network, and other transportation measures and policies, will reduce

the GHG emissions from automobiles and light trucks to achieve, if there is a feasible way to do so, the GHG emission reduction targets approved by the State Board; and

- Allow the RTP to comply with the Clean Air Act.

3.3.4 State Cap-and-Trade Program

The State Cap-and-Trade Program creates a market-based system with an overall emissions limit for affected sectors, including electric utilities, large industrial facilities and distributors of transportation, natural gas, and other fuels.

3.3.5 Senate Bills 1078/107/X 1-2

SBs 1078 and 107, California's Renewables Portfolio Standard, obligated investor-owned energy service providers and Community Choice Aggregations to procure an additional 1 percent of retail sales per year from eligible renewable sources until 20 percent was reached (by 2010). The California Public Utilities Commission (CPUC) and California Energy Commission (CEC) are jointly responsible for implementing the program. SB X 1-2, called the California Renewable Energy Resources Act, obligates all California electricity providers to obtain at least 33 percent of their energy from renewable resources by 2020.

3.3.6 Executive Order S-01-07

EO S-01-07 established a Low-Carbon Fuel Standard and directed the Secretary of the California Environmental Protection Agency (Cal/EPA) to develop and propose protocols for measuring the life-cycle carbon intensity of transportation fuels.

3.3.7 Executive Order S-3-05

EO S-3-05 established State GHG emission targets of 1990 levels by 2020 (the same as AB 32, enacted later and discussed below) and 80 percent below 1990 levels by 2050. It calls for the Secretary of the Cal/EPA to be responsible for the coordination of State agencies and progress reporting. In response to the EO, the Secretary of the Cal/EPA created the Climate Action Team (CAT). California's CAT originated as a coordinating council organized by the Secretary of the Cal/EPA.

3.3.8 Executive Order B-30-15

EO B-30-15 established a mid-term goal for 2030 of reducing GHG emissions by 40 percent below 1990 levels and required CARB to update its current AB 32 Scoping Plan to identify the measures to meet the 2030 target. The EO supports EO S-3-05, described above, but is currently binding only on State agencies.

3.3.9 California Green Building Standards Code

In January 2010, the California Building Standards Commission adopted the Statewide mandatory Green Building Standards Code (CALGreen) Part 11 of Title 24, California Code

of Regulations. The Code was most recently updated in 2017 (CalGreen 2016) to require additional energy savings. CALGreen applies to the planning, design, operation, construction, use and occupancy of every newly constructed building or structure.

3.3.10 California Environmental Quality Act and Senate Bill 97

By enacting SB 97 in 2007, California's lawmakers expressly recognized the need to analyze GHG emissions as a part of the CEQA process. SB 97 required the Office of Planning and Research (OPR) to develop, and the Natural Resources Agency to adopt, amendments to the CEQA Guidelines addressing the analysis and mitigation of GHG emissions. Those CEQA Guidelines amendments clarified several points, including the following:

- Lead agencies must analyze the GHG emissions of proposed projects and must reach a conclusion regarding the significance of those emissions (CEQA Guidelines Section 15064.4).
- When a project's GHG emissions may be significant, lead agencies must consider a range of potential mitigation measures to reduce those emissions (CEQA Guidelines Section 15126.4(c)).
- Lead agencies must analyze potentially significant impacts associated with placing projects in hazardous locations, including locations potentially affected by climate change (CEQA Guidelines Section 15126.2(a)).
- Lead agencies may significantly streamline the analysis of GHG on a project level by using a programmatic GHG emissions reduction plan meeting certain criteria (CEQA Guidelines Section 15183.5(b)).
- CEQA mandates analysis of a proposed project's potential energy use (including transportation-related energy), sources of energy supply, and ways to reduce energy demand, including through the use of efficient transportation alternatives (CEQA Guidelines, Appendix F).

Also related to SB 97, CEQA Section 21097 states that failure to analyze the effects of GHG emissions otherwise required to be reduced pursuant to regulations adopted by the CARB in an environmental impact report for either a transportation project funded under the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 or a project funded under the Disaster Preparedness and Flood Prevention Bond Act of 2006 does not create a cause of action for a violation of CEQA.

3.3.11 Senate Bill 743

SB 743 encourages land use and transportation planning decisions and investments that reduce vehicle miles traveled that contribute to GHG emissions, as required by AB 32. SB 743 requires the OPR to develop revisions to the CEQA Guidelines establishing criteria for determining the significance of transportation impacts of projects within transit priority

areas that promote the reduction of GHG emissions, the development of multi-modal transportation networks, and a diversity of land uses. It also allows OPR to develop alternative metrics outside of transit priority areas.

3.3.12 California Air Pollution Control Officers Association

The California Air Pollution Control Officers Association (CAPCOA) is a non-profit association of the air pollution control officers from all 35 local air quality agencies throughout California. CAPCOA promotes unity and efficiency in State air quality issues and strives to encourage consistency in methods and practices of air pollution control. In 2008, CAPCOA published the CEQA and Climate Change White Paper. This paper is intended to serve as a resource for reviewing GHG emissions from projects under CEQA. It considers the application of thresholds and offers approaches toward determining whether GHG emissions are significant. The paper also evaluates tools and methodologies for estimating impacts, and summarizes mitigation measures.

3.4 Regional

3.4.1 South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) adopted a “Policy on Global Warming and Stratospheric Ozone Depletion” on April 6, 1990. The policy commits the SCAQMD to consider global impacts in rulemaking and in drafting revisions to the Air Quality Management Plan. In March 1992, the SCAQMD Governing Board reaffirmed this policy and adopted amendments to the policy.

SCAQMD released draft guidance regarding interim CEQA GHG significance thresholds. In its October 2008 document, the SCAQMD proposed the use of a percent emission reduction target (e.g., 30 percent) to determine significance for commercial/residential projects that emit greater than 3,000 metric tons per year. On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold for stationary source/industrial projects where the SCAQMD is the lead agency. However, SCAQMD has yet to adopt a GHG significance threshold for land use development or transportation projects and has formed a GHG CEQA Significance Threshold Working Group to further evaluate potential GHG significance thresholds.

The GHG CEQA Significance Threshold Working Group is tasked with providing guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents. Members of the working group included government agencies implementing CEQA and representatives from various stakeholder groups that will provide input to the SCAQMD staff on developing CEQA GHG significance thresholds. The working group discussed multiple methodologies for determining project significance. These methodologies included categorical exemptions, consistency with regional GHG budgets in approved plans,

a numerical threshold, performance standards, and emissions offsets. The GHG CEQA Significance Threshold Working Group has not convened since 2008.

3.4.2 San Bernardino Council of Governments

San Bernardino Council of Governments (SBCOG) is the council of governments and transportation planning agency for the County of San Bernardino. SBCOG is responsible for cooperative regional planning and furthering an efficient multi-modal transportation system Countywide. SANBAG actively participates in the regional planning activities of the Southern California Association of Governments (SCAG). SCAG's planning area covers the counties of San Bernardino, Imperial, Los Angeles, Orange, Riverside, and Ventura. Members of the SANBAG Board of Directors serve on various SCAG committees and on the Regional Council, the governing board of SCAG.

SCAG adopted the 2016-2040 RTP/SCS on April 7, 2016, and it includes a strong commitment to reduce emissions from transportation sources to comply with SB 375. SB 375 requires CARB to develop regional CO₂ emission reduction targets (exclusive of Pavley emissions that are counted separately), compared to 2005 emissions, for cars and light trucks for 2020 and 2035 for each Metropolitan Planning Organization. The 2016-2040 RTP/SCS charts a course for closely integrating land use and transportation planning including in areas labeled as High Quality Transit Areas. High Quality Transit Areas are located within one-half mile of a fixed guideways transit stop or a bus transit corridor where passengers are picked up at a frequency of every 15 minutes or less during peak commuting hours. It outlines \$556.5 billion in transportation system investments through 2040.

The 2016-2040 RTP/SCS was prepared through a collaborative, continuous and comprehensive process by SCAG and it serves as an update to the 2012-2035 RTP/SCS. Major themes in the 2016-2040 RTP/SCS that are relevant to the project include integrating strategies for land use and transportation, striving for sustainability, protecting and preserving the existing transportation infrastructure, increasing capacity through improved system management, and giving people more transportation choice. Importantly, the 2016-2040 RTP/SCS states that the region will meet or exceed the SB 375 per capita targets, lowering regional per capita GHG emissions (below 2005 levels) by eight percent by 2020 and 18 percent by 2035. The 2016-2040 RTP/SCS also states that regional 2040 per capita emissions would be reduced by 22 percent, although CARB has not established a 2040 per capita emissions target.

SANBAG published the Regional Greenhouse Reduction Plan in 2014. The Plan provided SANBAG and the 21 participating cities with an inventory of GHG emissions, targets, and provided reduction strategies for each City. In addition, the Climate Action Plan (CAP) Implementation Tools Project, sponsored by SCAG, provided vital tools for the participating cities to use in the development, adoption, implementation, and monitoring of city specific

CAPs. Total GHG emissions, excluding stationary sources, for the combination of all partnership cities in 2008 were 13,543,455 metric tons of CO₂e. On-road transportation emissions represented 45 percent of emissions. The Plan states that on-road transportation measures can achieve significant benefits for both individual residents and the region as a whole. Reductions in VMT and traffic congestion would reduce smog-forming emissions, toxic air contaminants, and diesel particulate matter. Alternative modes of transportation, such as bicycling, walking, and transit, may also help reduce many serious health risks associated with vehicle exhaust. Community well-being and quality of life may also be improved as individuals spend less time commuting, waiting for the bus, and/or sitting in heavy congestion. For on-road emissions, the Plan includes a measure to improve transit travel time and connectivity (On-Road-1.1). This measure is described as reducing transit passenger travel time through reduced headways and increased speed, along with improving intermodal connectivity. In addition, measure On-Road-1.2 references other transit improvements, including additional bus rapid transit routes.

3.5 Local

3.5.1 Omnitrans

Omnitrans has committed to a core set of actions on sustainability promoted by the APTA. APTA's Sustainability Commitment Program is a voluntary program in which member agencies pledge their commitment to sustainability. Signatory agencies must commit to the following:

- Make sustainability part of the agency's strategic objectives;
- Identify a sustainability champion within the agency who tracks key sustainability indicators and targets, reports annually to APTA, engages with the agency and community, and recommends and implements short and long-term goals and programs;
- Establish an outreach program on sustainability for staff; and
- Establish a baseline measurement for key indicators.

Targets are set to reduce or increase certain key indicators, measured by APTA's standard methodology. The indicators include the following:

- Water usage and pollutant discharge;
- Criteria air pollutant emissions;
- GHG emissions/savings;
- Energy use;
- Recycling levels/waste;
- Operating expense;
- Unlinked passenger trips; and
- VMT.

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4.0 EXISTING CONDITIONS

GHGs are the result of both natural and human-influenced activities. Volcanic activity, forest fires, decomposition, industrial processes, landfills, consumption of fossil fuels for power generation, transportation, heating, and cooling are the primary sources of GHG emissions. Without human activity, the Earth would maintain an approximate, but varied, balance between the emission of GHGs into the atmosphere and the storage of GHG in oceans and terrestrial ecosystems. Increased combustion of fossil fuels (e.g., gasoline, diesel, coal, etc.) has contributed to a rapid increase in atmospheric levels of GHGs over the last 150 years.

The primary effect of rising global concentrations of atmospheric GHG levels is a rise in the average global temperature of approximately 0.2 degrees Celsius per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling using 2000 emission rates shows that further warming is likely to occur given the expected rise in global atmospheric GHG concentrations from innumerable sources of GHG emissions worldwide (including from economically developed and developing countries and deforestation), which would induce further changes in the global climate system during the current century.⁸

Adverse impacts from global climate change worldwide and in California include:

- Declining sea ice and mountain snowpack levels, thereby increasing sea levels and sea surface evaporation rates with a corresponding increase in atmospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures;⁹
- Rising average global sea levels primarily due to thermal expansion and the melting of glaciers, ice caps, and the Greenland and Antarctic ice sheets;¹⁰
- Changing weather patterns, including changes to precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones;¹¹
- Declining Sierra Mountains snowpack levels, which account for approximately half of the surface water storage in California, by 70 percent to as much as 90 percent over the next 100 years;¹²
- Increasing the number of days conducive to ozone formation (e.g., clear days with intense sun light) by 25 percent to 85 percent (depending on the future temperature scenario) in high ozone areas located in the Southern California area and the San Joaquin Valley by the end of the 21st Century;¹³ and

⁸ USEPA, Draft Endangerment Finding, 74 Fed. Reg. 18886, 18904, April 24, 2009.

⁹ Ibid.

¹⁰ Intergovernmental Panel on Climate Change, Climate Change 2013: The Physical Science Basis, Fifth Assessment Report, ISBN 978 1 107 05799-1 Hardback; 978 1 66182-0 Paperback. 2013.

¹¹ Ibid.

¹² Cal/EPA, Climate Action Team Report to Governor Schwarzenegger and the California Legislature, 2006.

¹³ Cal/EPA, Climate Action Team Report to Governor Schwarzenegger and the California Legislature, 2006.

- Increasing the potential for erosion of California's coastlines and seawater intrusion into the Sacramento Delta and associated levee systems due to the rise in sea level.¹⁴

Scientific understanding of the fundamental processes responsible for global climate change has improved over the past decade. However, there remain significant scientific uncertainties, for example, in predictions of local effects of climate change, occurrence of extreme weather events, and effects of aerosols, changes in clouds, shifts in the intensity and distribution of precipitation, volcanic activity, and changes in oceanic circulation. Due to the complexity of the climate system, the uncertainty surrounding the implications of climate change may never be completely eliminated. Because of these uncertainties, there continues to be significant debate as to the extent to which increased concentrations of GHGs have caused or will cause climate change, and with respect to the appropriate actions to limit and/or respond to climate change. Given the scale over which climate change occurs, as well as the uncertainties described above, it is not possible to link specific development projects to future specific climate change impacts, though estimating project-specific emissions is possible.

CARB has prepared a Statewide emissions inventory covering 2000 to 2014, which demonstrates that GHG emissions have decreased by 7.9 percent over that period. California's largest single source of GHGs are emissions from the transportation sector, contributing approximately 37 percent of total emissions. Emissions from this sector declined marginally compared to 2011, even while the economy and population continued to grow. The long-term direction of transportation-related GHG emissions is another clear trend, with a 13-percent drop over the past ten years. Table 4-1 shows GHG emissions from 2005 to 2014.

Table 4-1: California Greenhouse Gas Emissions Inventory

Sector	CO ₂ e Emissions (Million Metric Tons)									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Transportation	184	184	184	173	166	163	159	159	158	160
Industrial	95	93	90	90	88	91	91	91	93	93
Electric Power	108	105	114	120	101	90	88	95	90	88
Commercial and Residential	42	43	43	43	44	45	45	43	43	38
Agriculture	34	36	36	36	34	35	36	37	35	36
High Global Warming Potential	8	8	9	10	11	12	14	15	16	17
Recycling and Waste	8	8	8	8	8	9	9	9	9	9
Emissions Total	479	477	484	480	452	445	442	449	444	441

CARB, *California Greenhouse Gas Inventory 2000-2014*, March 30, 2016

¹⁴ Ibid.

5.0 IMPACTS ANALYSIS

5.1 Impact Criteria and Significance Thresholds

5.1.1 National Environmental Policy Act

There are no adopted quantitative thresholds that are relevant to the NEPA analysis. Potential adverse effects of quantified GHG emissions are assessed by comparing the magnitude of emissions associated with the Build Alternative to the No Build Alternative. Implications of climate change on the proposed action are qualitatively assessed.

5.1.2 California Environmental Quality Act

In accordance with Appendix G of the CEQA Guidelines, the project would result in a significant impact related to GHG if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; and/or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

The SCAQMD has yet to adopt a GHG significance threshold for transportation or land use development projects, although it has adopted significance thresholds for industrial-type projects for which it is the lead agency. However, those industrial thresholds are not relevant to the project.

On November 30, 2015, the California Supreme Court issued an opinion on GHG significance thresholds for CEQA in the case *Center for Biological Diversity et al. vs. California Department of Fish and Wildlife*. The following discussion is paraphrased from that case, which assessed the use of GHG significance thresholds.

The Court stated that California air pollution control officials and air quality districts had made several proposals for numerical thresholds. Multiple agencies' efforts at framing GHG significance issues have not yet coalesced into any widely accepted set of numerical significance thresholds, but have produced a certain level of consensus on the value of AB 32 consistency as a criterion. Neither AB 32 nor the AB 32 Scoping Plan set out a mandate or method for CEQA analysis of GHG emissions from a proposed project. A 2007 CEQA amendment, however, required the preparation, adoption and periodic update of guidelines for mitigation of GHG impacts. The resulting direction was that a lead agency should attempt to describe, calculate or estimate the amount of GHG the project will emit, but recognizes that agencies have discretion in how to do so.

It goes on to provide that when assessing the significance of GHG emissions, the agency should consider these factors among others: (1) the extent to which the project may

increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) the extent to which the project complies with regulations or requirements adopted to implement a Statewide, regional, or local plan for the reduction or mitigation of GHG emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the Project.

The Court also acknowledged that the scope of global climate change and the fact that GHGs, once released into the atmosphere, are not contained in the local area of their emission means that the impacts to be evaluated are global rather than local. For many air pollutants, the significance of their environmental impact may depend greatly on where they are emitted; for GHG, it does not.

Meeting Statewide reduction goals does not preclude all new development. Rather, the Scoping Plan, the State's roadmap for meeting AB 32's target, assumes continued growth and depends on increased efficiency and conservation in land use and transportation from all Californians. To the extent a project incorporates efficiency and conservation measures sufficient to contribute its portion of the overall GHG reductions necessary for the entire State, one can reasonably argue that a project's impact is not cumulatively considerable, because it would be helping to solve the cumulative problem of greenhouse gas emissions as envisioned by California law. Given the reality of growth, some GHG emissions from new development is inevitable. The critical CEQA question is the cumulative significance of a project's GHG emissions, and from a climate change point of view it does not matter where in the State those emissions are produced. Under these circumstances, evaluating the significance of GHG emissions by their effect on the State's efforts to meet its long-term goals is a reasonable threshold.

Using consistency with AB 32's Statewide goal for GHG reduction, rather than a numerical threshold, as a significance criterion is also consistent with the broad guidance provided by Section 15064.4 of the CEQA Guidelines. Section 15064.4 was drafted to reflect that there is no iron-clad definition of significance. Section 15064.4 was not intended to restrict agency discretion in choosing a method for assessing GHG emissions, but rather to assist lead agencies in investigating and disclosing all that they reasonably can regarding a project's GHG emissions impacts.

While the Supreme Court held that establishing a significance criterion based on consistency with AB 32's reduction goals was appropriate, the Court found that there was no substantial evidence supporting the conclusion of the EIR at issue in that case that the

Project would be consistent with AB 32's reduction goals. As background, AB 32 requires Statewide GHG emissions to return to 1990 levels by 2020. In the AB 32 Scoping Plan, CARB determined that meeting this Statewide GHG reduction goal would require a 29 percent reduction in Statewide emissions from a business-as-usual approach (i.e., an approach with no conservation or regulatory efforts beyond what was in place when the forecast was made).

Based on this, the EIR had concluded the project would not result in a significant climate change impact because the project was designed to reduce GHG emissions by 31 percent over a business-as-usual approach. The Supreme Court found that there was no substantial evidence that the project-level reduction of 31 percent in comparison to business as usual is consistent with AB 32's Statewide goal of a 29 percent reduction from business as usual. The Court reasoned that the Scoping Plan nowhere related its Statewide level of reduction efforts to the percentage of reduction that would or should be required from individual projects, and nothing in the administrative record indicated that the required percentage reduction from business as usual is the same for an individual project as for the entire State population and economy. The Court suggested, however, that an appropriate threshold could assess whether a project would comply with regulatory programs designed to reduce emissions from particular activities.

5.2 Methodology

Implementation of the project would generate GHG emissions temporarily during construction activities and continually during operation following completion of the BRT line. Emissions were estimated separately for the temporary construction activities and the long-term operational conditions associated with the project. A combination of air quality modeling tools was utilized to characterize emissions from construction of the project as well as future operations with and without implementation of the project throughout the traffic study area.

Construction of the project would occur in several phases, including site clearing, grading and excavation, utilities and sub-grade installations, and paving. During each phase of construction, GHG emissions would be generated by the use of heavy duty construction equipment, worker travel to and from the project site, material import and export using haul trucks, and fugitive dust sources such as material movement. Emissions associated with heavy-duty equipment exhaust were quantified in the Road Construction Emissions Model (RCEM) Version 8.1.0, June 2016 using emission factors from the OFFROAD emission factors inventory, which are expressed in emissions per hour of equipment use. The OFFROAD emission factors inventory was compiled by the CARB, and the construction emissions model was assembled by the Sacramento Metropolitan Air Quality Management District to assist in estimating emissions from road construction projects.

In addition to the equipment exhaust emissions, the RCEM estimates emissions from worker travel and haul trucks used to transport material to and from the project site. Emissions factors for the worker vehicles and haul trucks were obtained from EMFAC2014—the CARB on-road emission factors inventory model—and incorporated into the RCEM analysis. EMFAC2014 yields emissions factors based on VMT. Emissions were quantified based on anticipated workforce requirements and volumes of material import and export for haul truck trips. Finally, the RCEM also generated estimates of fugitive particulate matter emissions from material movement on the project site during the clearing and grading and excavation phases. Detailed construction information is not available at this point in the design process. The analysis relied on general information provided by the project team and RCEM default assumptions. Key inputs to the RCEM analysis are shown in Table 5-1.

Table 5-1: Roadway Construction Emissions Model Input Variables

Parameter	Alternative A	Alternative B
Phase I		
Construction Start Year	2021	2021
Duration	Up to 20 Months	Up to 24 Months
Maximum Acreage Disturbed per Day (acres)	0.3	2.6
Phase II		
Construction Start Year	2023	2023
Duration	12 months	12 months
Maximum Acreage Disturbed per Day (acres)	0.3	0.3

Source: Parsons, 2016

Operational GHG emissions associated with implementation of the project would result from vehicular traffic along the BRT corridor that could potentially be affected by the installation of the additional lane(s), additional bus route VMT, and vehicle trips and energy use associated with the O&M facility. Vehicular traffic would represent mobile emissions sources, while components of the O&M facility would be considered stationary sources. Mobile source emissions were quantified using the CARB EMFAC2014 model for on-road mobile sources. The EMFAC2014 model generated exhaust emissions factors. Emissions were calculated based on speed distribution and truck percentage data throughout the traffic study area for existing conditions (2016), opening year (2023), and horizon year (2040) scenarios. For the 2023 and 2040 scenarios, emissions estimates were prepared for the No Build Alternative, as well as Alternatives A and B.

In addition to roadway work to accommodate the project and changes to regional circulation patterns, construction and operation of the O&M facility would generate sources of short-term and permanent GHG emissions, respectively. GHG emissions that will be generated by construction and operation of the O&M facility were estimated using the California Emissions Estimator Model (CalEEMod, Version 2016.3.2), which is the preferred regulatory tool for

quantifying estimates of GHG emissions associated with land use development projects. Information describing the O&M facility was obtained from the O&M Facility Needs Assessment Report. Construction of the O&M facility would occur during Phase I construction for both Alternative A and Alternative B, concurrent with Milliken alignment construction.

Documentation for all emissions factors and estimated project emissions can be found in Appendix A.

5.3 Impact Analysis

5.3.1 NEPA Analysis

The following analysis is based on the CEQA final guidance for assessing GHG emissions and climate change in NEPA documents.

Greenhouse Gas Emissions

The emissions analysis for the project addresses emissions and the potential effects on regional and local air quality under existing conditions, the No Build Alternative, and the Build Alternatives. The primary source of direct emissions under operational conditions is vehicular traffic. Emissions from vehicular traffic within the project corridor are based on the VMT, speed distributions, and vehicle types. Table 5-2 displays the VMT for existing conditions (2016), the No Build and Build Alternatives in the opening year (2023), and the No Build and Build Alternatives in the design year (2040). The total VMT in the project area is the same between Alternatives A and B, as the number of mixed-flow lanes remains unchanged.

Table 5-2: Project Corridor Vehicle Miles Traveled

Scenario	No Build	Alternative A	Alternative B
Existing VMT (2016)	12,926,868	-	-
Opening Year VMT (2023)	13,393,271	13,389,567	13,389,287
Percent Change from Existing (%)	3.6%	3.6%	3.6%
Percent Change from No Build (%)	-	-0.03%	-0.03%
Design Year VMT (2040)	15,725,284	15,721,813	15,722,280
Percent Change from Existing (%)	21.6%	21.6%	21.6%
Percent Change from No Build (%)	-	-0.04%	-0.04%
Note: The VMT analysis was prepared when 2020 was the estimated opening year. The current opening year estimate is 2023. Nevertheless, the traffic modeling forecast considered VMT through 2040, and indicates that VMT would decrease in the opening and horizon years. A three-year delay in the opening date does not substantially alter this analysis. In addition, within the EMFAC2014 model, pollutant emissions decrease in future years due to fleet turn over and improvements in engine exhaust technology.			

Source: Terry A. Hayes Associates Inc., 2018

The project corridor passenger vehicle, truck, and bus VMT data and CalEEMod files for the O&M facility were utilized to estimate GHG emissions resulting from implementation of the project. Table 5-3 presents the results of operational emissions modeling for vehicular traffic based on speed distribution and fleet mix data provided in the traffic study. Table 5-3 also shows the difference in emissions between the Build Alternatives and the No Build Alternative. Implementation of the project would result in a marginal increase in GHG emissions in 2023 and 2040 relative to the No Build Alternative, with the greatest increase of 0.08% occurring under the 2040 Alternative B configuration. The slight increase in emissions would be related to increased regional truck VMT and operation of the O&M facility. The truck VMT increase offsets the regional reduction in passenger vehicle VMT. Regardless, the percent change in emissions is not considered significant for any of the Build Alternatives. Therefore, the project would not result in an adverse effect related to GHG emissions.

Table 5-3: Greenhouse Gas Emissions Analysis Relative to No Build Alternative

Scenario	Annual Emissions (Metric Tons CO ₂ e)	Build Alternative Relative to No Build Alternative	Percent Difference
Existing (2016)	2,021,030	--	--
Opening Year (2023)			
No Build Alternative	1,898,124	--	--
Alternative A	1,898,918	794	0.04%
Alternative B	1,899,229	1,105	0.06%
Design Year (2040)			
No Build Alternative	1,475,058	--	--
Alternative A	1,475,324	265	0.02%
Alternative B	1,476,277	1,218	0.08%
Note: The VMT analysis was prepared when 2020 was the estimated opening year. The current opening year estimate is 2023. Nevertheless, the traffic modeling forecast considered VMT through 2040, and indicates that VMT would decrease in the opening and horizon years. A three-year delay in the opening date does not substantially alter this analysis. In addition, within the EMFAC2014 model, pollutant emissions decrease in future years due to fleet turn over and improvements in engine exhaust technology.			

Source: Terry A. Hayes Associates Inc., 2018

Climate Change Effects

Several impacts on the environment are expected throughout California as a result of global climate change. The extent of these effects is being defined as climate modeling tools become more refined. Regardless of the uncertainty in precise predictions, it is widely understood that substantial climate change is expected to occur in the future. Potential climate change impacts include, but are not limited to, extreme heat events, increased water and energy consumption, and changes in species distribution and range. Certain low-lying areas may be susceptible to flooding that has been influenced by climate-change events. Section 4.7, Hydrology and Water Quality, of the EIR/EA (Parsons, 2016) includes a

detailed discussion of potential flooding. According to the EIR/EA, no impacts to flood channels are anticipated under Alternative A.

However, Alternative B would encroach upon the West Cucamonga Channel's floodplain culvert crossing east of the intersection of Grove Avenue/Holt Boulevard. The channel is a triple box, open channel that is lined with concrete on the sides and bottom. The channel has a 1 percent annual chance flood capacity within the project area. The proposed work would entail extending the culvert crossing by 30 feet (15 feet on each side) to accommodate the roadway widening. The 100-year flood event would still be contained in the channel under the proposed conditions. The entire road surface would be above the 100-year floodplain. The project would not alter water surface elevations of the 100-year flood.

The Build Alternatives would be consistent with development plans for the area and would not significantly change the land use in the area because it is currently developed or zoned for development. The Build Alternatives would not expose people or structures to the risk of flooding, create floodplains, or result in an increase in the base flood elevation. Natural and beneficial floodplain values would not be affected by the Build Alternatives. A range of other potential climate change impacts may affect the proposed project, including increased temperatures, heat stress days, and water supplies. The BRT project has no component that would not exacerbate these issues. Therefore, the project would not result in an adverse effect related to climate change.

5.3.2 CEQA Analysis

This section of the report analyzes GHG emissions that would be generated by the construction activities and future operating conditions of the project in accordance with the criteria set forth in Appendix G of the CEQA Guidelines. The discussions were prepared in consideration of the thresholds of significance outlined in Section 5.1.2 of this report.

Greenhouse Gas Emissions

Operational GHG emissions associated with implementation of the project would result from vehicular traffic along the BRT corridor that could potentially be affected by the installation of the additional lane(s). Regional emissions estimated using EMFAC2014 are shown in Table 5-3, above, for the existing condition (2016), opening year (2023), and design year (2040). Table 5-4 shows that compared to the CEQA baseline of 2016, the Build Alternatives would generate substantially less GHG emissions in 2023 and 2040. This is because exhaust emissions decrease in future years as the vehicle fleet continues to turn over to newer, more efficient vehicles and emission standards become more stringent. When comparing Build to No Build Alternative emissions, GHG emissions would increase by a maximum of 0.06 percent in 2023 and 0.08 percent in 2040. The slight increase in

emissions would be related to increased regional truck VMT and emissions from the O&M facility. The truck VMT increase offsets the regional reduction in passenger vehicle VMT.

Construction activities would generate GHG emissions of CO₂, CH₄, and N₂O from mobile and stationary construction equipment exhaust as well as employee and haul truck vehicle exhaust. It is estimated that total GHG emissions associated with construction of Build Alternative A would be 1,402 MTCO₂e and GHG emissions associated with Build Alternative B would be 4,113 MTCO₂e. Construction of the O&M facility would account for 515 MTCO₂e for both Build Alternatives.

Operational GHG emissions have been quantified for public disclosure. As discussed above under Thresholds of Significance, evaluating the significance of GHG emissions by their effect on the state's efforts to meet its long-term goals is a reasonable threshold.

Table 5-4: Greenhouse Gas Emissions Analysis Relative to the CEQA Baseline

Scenario	Annual Emissions (Metric Tons CO ₂ e)	Change from the Existing Conditions	Percent Difference
Existing (2016)	2,021,030	--	--
Opening Year (2023)			
No Build Alternative	1,898,124	-122,906	-6.1%
Alternative A	1,898,918	-122,112	-6.0%
Alternative B	1,899,229	-121,801	-6.0%
Design Year (2040)			
No Build Alternative	1,475,058	-545,972	-27%
Alternative A	1,475,324	-545,707	-27%
Alternative B	1,476,277	-544,754	-27%
Note: The VMT analysis was prepared when 2020 was the estimated opening year. The current opening year estimate is 2023. Nevertheless, the traffic modeling forecast considered VMT through 2040, and indicates that VMT would decrease in the opening and horizon years. A three-year delay in the opening date does not substantially alter this analysis. In addition, within the EMFAC2014 model, pollutant emissions decrease in future years due to fleet turn over and improvements in engine exhaust technology.			

Source: Terry A. Hayes Associates Inc., 2018

Conflicts with Greenhouse Gas Reduction Plans

Relevant plans adopted for the purposes of reducing GHG emissions include the AB 32 Scoping Plan, the 2016-2040 RTP/SCS, and the SANBAG Regional Greenhouse Reduction Plan. In addition, consistency with EO S-03-05 and EO B-30-15 is also considered, although no state or local regulations have been adopted to enforce the EO goals with respect to land use approvals.

Consistency with AB 32 Scoping Plan

The AB 32 Scoping Plan outlines a series of technologically feasible and cost-effective measures to reduce statewide GHG emissions, including expanding energy efficiency programs, increasing electricity production from renewable resources (at least 33 percent of the statewide electricity mix), and increasing automobile efficiency, implementing the Low-Carbon Fuel Standard, and developing a cap-and-trade program.

At the time the California Natural Resources Agency promulgated Guidelines Section 15064.4, the agency explained that the AB 32 Scoping Plan “may not be appropriate for use in determining the significance of individual projects because it is conceptual at this state and relies on the future development of regulations to implement and the strategies identified in the Scoping Plan” (California Natural Resources Agency 2009:26–27).

The technologically feasible and cost-effective measures listed in the AB 32 Scoping Plan are designed to be implemented by state agencies. Nevertheless, local governments and private developments can support AB 32 goals through consistent implementation of AB 32 Scoping Plan policies, where applicable. Extension of transit is a core AB 32 strategy. Accordingly, the proposed project would support state goals for alternative transportation. Moreover, as shown in Table 5-3, the proposed project would result in a long-term GHG reduction compared to the CEQA baseline. The proposed project would have a less-than-significant impact related to consistency with the policies in the AB 32 Scoping Plan.

Consistency with SCAG and SBCOG Policies

The SCAG 2016-2040 RTP/SCS includes a strong commitment to reduce emissions from transportation sources to comply with SB 375. The plan charts a course for closely integrating land use and transportation planning including in areas labeled as High Quality Transit Areas. High Quality Transit Areas are located within one-half mile of a fixed guideway transit stop or a bus transit corridor where passengers are picked up at a frequency of every 15 minutes or less during peak commuting hours. Major themes in the 2016-2040 RTP/SCS that are relevant to the project include integrating strategies for land use and transportation, striving for sustainability, protecting and preserving the existing transportation infrastructure, increasing capacity through improved system management, and giving people more transportation choices. The proposed project would provide increased regional transit opportunities, would create new High Quality Transit Areas, and would not interfere with SCAG’s ability to implement the regional strategies outlined in the 2016-2040 RTP/SCS. In addition, the proposed project is included in the list of projects for the 2016-2040 RTP/SCS.

The SANBAG (now SBCOG) Regional Greenhouse Reduction Plan was published in 2014. The plan provided SBCOG and the 21 participating cities with an inventory of GHG emissions, targets, and provided reduction strategies for each City. For on-road emissions,

the plan includes a measure to improve transit travel time and connectivity (On-Road-1.1). This measure is described as reducing transit passenger travel time through reduced headways and increased speed, along with improving intermodal connectivity. In addition, measure On-Road-1.2 references other transit improvements, including additional bus rapid transit routes. The proposed project would be consistent with both of these measures.

Omnitrans sustainability commitments also ensure consistency with regional GHG reduction plans. Omnitrans is a member of the APTA Sustainability Commitment Program, which requires the following commitments:

- Make sustainability part of the agency's strategic objectives;
- Identify a sustainability champion within the agency who tracks key sustainability indicators and targets, reports annually to APTA, engages with the agency and community, and recommends and implements short and long-term goals and programs;
- Establish an outreach program on sustainability for staff; and
- Establish a baseline measurement for key indicators.

Consistency with Executive Orders S-3-05 and B-30-15 (Post-2020 Goals)

EO B-30-15 established an interim GHG reduction target of 40 percent below 1990 levels by 2030, and EO S-3-05 established a long-term goal of reducing Statewide GHG emissions to 80 percent below 1990 levels by 2050. Achieving these long-term GHG reduction policies will require systemic changes in how energy is produced and used. In evaluating emissions for consistency with EO S-3-05 and EO B-30-15, it is important to note that many of these broad-scale shifts in how energy is produced and used are outside of the control of the transit project. It is anticipated that State programs adopted to reduce post-2020 emissions will extend strategies outlined in the AB 32 Scoping Plan. Increased transit will be a critical component of any post-2020 policy. Accordingly, the proposed project will facilitate anticipated GHG strategies adopted and recommended at the State level to reduce post-2020 emissions, consistent with goals outlined under EO B-30-15 and EO S-3-05.

Moreover, as shown in Table 5-3, the BRT line would result in a long-term GHG reduction compared to the CEQA baseline due to increased public transit ridership and less reliance on passenger vehicles. The proposed project would therefore have a less-than-significant impact related to consistency with EO B-30-15 and EO S-3-05.

6.0 CONCLUSIONS, RECOMMENDATIONS, & MITIGATION MEASURES

The GHG Study quantified construction and operational emissions and assessed consistency with GHG reduction plans. The proposed project is a mass transit system that is consistent with State and regional policies to reduce long-term GHG emissions. No significant impacts have been identified under CEQA and no adverse effects have been identified under NEPA. No mitigation or control measures are necessary to reduce GHG emissions.

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7.0 REFERENCES

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APPENDIX A – GREENHOUSE GAS CALCULATIONS

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Appendix A

Greenhouse Gas Calculations

GHG Emissions Summary

<u>YEAR</u>	<u>Alternative</u>	<u>Phase Completed</u>	<u>Auto VMT</u>	<u>Truck VMT</u>	<u>Total VMT</u>	<u>CH4 (lb/day)</u>	<u>CO2 (lb/day)</u>	<u>CO2e (MT/year)</u>		
2016	NB	E	12,077,346.6	849,521.7	12,926,868	414.7	12,066,474.1	2022647		
2020	NB	E	12,496,047.1	897,223.9	13,393,271	302.9	11,333,192.9	1893867	-128780	-6.4%
2020	A	Phase I	12,491,836.9	897,729.8	13,389,567	302.9	11,332,424.4	1893745	-128901	-6.4%
2020	B	Phase I	12,490,176.6	899,110.9	13,389,287	302.9	11,334,302.7	1894067	-128580	-6.4%
2040	NB	E	14,589,549.2	1,135,734.9	15,725,284	168.0	8,792,559.0	1461841	-560806	-28%
2040	A	Phase II	14,585,971.3	1,135,841.8	15,721,813	167.8	8,788,675.4	1461182	-561465	-28%
2040	B	Phase II	14,584,598.6	1,137,681.4	15,722,280	167.9	8,794,428.0	1462146	-560501	-28%

<u>Scenario</u>	<u>Source</u>	<u>CH4 (lb/day)</u>	<u>CO2 (lb/day)</u>	<u>CO2e (MT/year)</u>
	O&M Facility			793
2016E	Bus VMT	446.44	119131.87	21571
2020NB	Bus VMT	328.14	115806.29	20531
2020B	Bus VMT	330.18	116525.51	20659
2040NB	Bus VMT	139.13	109195.25	18654
2040B	Bus VMT	139.99	109873.41	18770
2016E	PV+T+BUS	861	12,185,606	2,021,030
2020NB	PV+T+BUS	631	11,448,999	1,898,124
2020A	PV+T+BUS+O&M	633	11,448,950	1,898,918
2020B	PV+T+BUS+O&M	633	11,450,828	1,899,229
2040NB	PV+T+BUS	307	8,901,754	1,475,058
2040A	PV+T+BUS+O&M	308	8,898,549	1,475,324
2040B	PV+T+BUS+O&M	308	8,904,301	1,476,277
2020	AΔNB	2	-49	794
2020	BΔNB	2	1,829	1,105
2020	AΔNB%	0.32%	0.00%	0.04%
2020	BΔNB%	0.32%	0.02%	0.06%
2040	AΔNB	1	-3,205	265
2040	BΔNB	1	2,547	1,218
2040	AΔNB%	0.20%	-0.04%	0.02%
2040	BΔNB%	0.25%	0.03%	0.08%

Mobile Source Emissions Calculation Sheets

<u>YEAR</u>	<u>Alternative</u>	<u>Alignment</u>	<u>Speed</u>	<u>Auto VMT</u>	<u>Truck VMT</u>	<u>Auto Weight (ton)</u>	<u>Truck Weight (Ton)</u>	<u>CH4 Auto</u>	<u>CH4 Truck</u>	<u>CH4 (lb/day)</u>	<u>CO2 Auto</u>	<u>CO2 Truck</u>	<u>CO2 (lb/day)</u>
2016	A	M	5	590.5	78.0	1.55	20.00	0.10	0.21	0.16	1196.24	2542.97	1994.44
2016	A	M	10	10,506.1	1,387.3	1.55	20.00	0.06	0.16	1.97	890.07	2281.45	27593.37
2016	A	M	15	38,800.0	5,123.3	1.55	20.00	0.04	0.10	4.67	685.11	1836.08	79342.47
2016	A	M	20	89,814.5	11,859.4	1.55	20.00	0.03	0.07	7.23	547.11	1579.41	149626.38
2016	A	M	25	284,276.0	37,536.8	1.55	20.00	0.02	0.05	17.09	454.26	1439.63	403832.48
2016	A	M	30	1,533,587.7	202,500.1	1.55	20.00	0.02	0.04	72.64	391.54	1342.26	1923017.71
2016	A	M	35	2,232,886.7	294,837.9	1.55	20.00	0.01	0.03	86.72	350.11	1280.22	2555616.83
2016	A	M	40	1,310,127.3	172,993.6	1.55	20.00	0.01	0.02	43.57	324.75	1226.37	1405702.25
2016	A	M	45	518,434.1	68,455.8	1.55	20.00	0.01	0.02	15.48	312.43	1181.37	535386.39
2016	A	M	50	418,897.2	55,312.6	1.55	20.00	0.01	0.02	11.83	311.81	1156.02	428933.30
2016	A	M	55	697,795.8	0.0	1.55	20.00	0.01	0.02	16.63	322.94	1140.33	496804.58
2016	A	M	60	1,755,494.7	0.0	1.55	20.00	0.01	0.01	44.87	347.07	1132.33	1343224.85
2016	A	M	65	3,181,934.4	0.0	1.55	20.00	0.01	0.02	91.82	387.02	1135.12	2714918.40
2016	A	H	5	661.0	86.9	1.55	20.00	0.10	0.21	0.18	1196.24	2542.97	2230.52
2016	A	H	10	10,434.1	1,372.4	1.55	20.00	0.06	0.16	1.95	890.07	2281.45	27377.43
2016	A	H	15	38,897.7	5,116.4	1.55	20.00	0.04	0.10	4.68	685.11	1836.08	79462.11
2016	A	H	20	89,649.5	11,792.0	1.55	20.00	0.03	0.07	7.21	547.11	1579.41	149192.63
2016	A	H	25	284,697.2	37,447.6	1.55	20.00	0.02	0.05	17.10	454.26	1439.63	403971.25
2016	A	H	30	1,535,697.8	201,997.6	1.55	20.00	0.02	0.04	72.68	391.54	1342.26	1923352.19
2016	A	H	35	2,230,546.9	293,394.4	1.55	20.00	0.01	0.03	86.56	350.11	1280.22	2549736.84
2016	A	H	40	1,309,022.8	172,182.0	1.55	20.00	0.01	0.02	43.50	324.75	1226.37	1402717.07
2016	A	H	45	520,892.9	68,515.5	1.55	20.00	0.01	0.02	15.54	312.43	1181.37	537235.59
2016	A	H	50	438,638.0	57,696.1	1.55	20.00	0.01	0.02	12.38	311.81	1156.02	448578.50
2016	A	H	55	686,207.9	0.0	1.55	20.00	0.01	0.02	16.35	322.94	1140.33	488554.41
2016	A	H	60	1,745,296.1	0.0	1.55	20.00	0.01	0.01	44.61	347.07	1132.33	1335421.38
2016	A	H	65	3,182,344.9	0.0	1.55	20.00	0.01	0.02	91.83	387.02	1135.12	2715268.60
2016	B	M	5	591.0	77.9	1.55	20.00	0.10	0.21	0.16	1196.24	2542.97	1995.06
2016	B	M	10	10,518.0	1,385.6	1.55	20.00	0.06	0.16	1.97	890.07	2281.45	27608.08
2016	B	M	15	38,837.1	5,116.1	1.55	20.00	0.04	0.10	4.67	685.11	1836.08	79369.32
2016	B	M	20	90,476.0	11,918.6	1.55	20.00	0.03	0.07	7.28	547.11	1579.41	150630.24
2016	B	M	25	286,754.7	37,774.8	1.55	20.00	0.02	0.05	17.23	454.26	1439.63	407070.26
2016	B	M	30	1,525,412.3	200,945.6	1.55	20.00	0.02	0.04	72.21	391.54	1342.26	1911360.80
2016	B	M	35	2,241,362.0	295,259.1	1.55	20.00	0.01	0.03	87.01	350.11	1280.22	2563347.32
2016	B	M	40	1,304,453.6	171,838.3	1.55	20.00	0.01	0.02	43.36	324.75	1226.37	1398516.49
2016	B	M	45	522,074.2	68,773.9	1.55	20.00	0.01	0.02	15.58	312.43	1181.37	538722.13
2016	B	M	50	438,316.8	57,740.3	1.55	20.00	0.01	0.02	12.37	311.81	1156.02	448470.34
2016	B	M	55	688,181.8	0.0	1.55	20.00	0.01	0.02	16.40	322.94	1140.33	489959.78
2016	B	M	60	1,742,509.6	0.0	1.55	20.00	0.01	0.01	44.54	347.07	1132.33	1333289.25
2016	B	M	65	3,183,167.1	0.0	1.55	20.00	0.01	0.02	91.86	387.02	1135.12	2715970.12
2016	B	H	5	590.2	78.0	1.55	20.00	0.10	0.21	0.16	1196.24	2542.97	1993.84
2016	B	H	10	10,495.5	1,386.6	1.55	20.00	0.06	0.16	1.97	890.07	2281.45	27569.30
2016	B	H	15	38,981.5	5,150.1	1.55	20.00	0.04	0.10	4.69	685.11	1836.08	79725.32
2016	B	H	20	89,914.9	11,879.3	1.55	20.00	0.03	0.07	7.24	547.11	1579.41	149816.67
2016	B	H	25	283,809.5	37,496.1	1.55	20.00	0.02	0.05	17.07	454.26	1439.63	403236.33
2016	B	H	30	1,526,651.0	201,696.9	1.55	20.00	0.02	0.04	72.32	391.54	1342.26	1914653.13
2016	B	H	35	2,239,179.3	295,834.1	1.55	20.00	0.01	0.03	86.98	350.11	1280.22	2563285.59
2016	B	H	40	1,308,215.9	172,837.8	1.55	20.00	0.01	0.02	43.51	324.75	1226.37	1403912.50
2016	B	H	45	512,879.7	67,760.2	1.55	20.00	0.01	0.02	15.31	312.43	1181.37	529749.09

Mobile Source Emissions Calculation Sheets

YEAR	Alternative	Alignment	Speed	Auto VMT	Truck VMT	Auto Weight (ton)	Truck Weight (Ton)	CH4 Auto	CH4 Truck	CH4 (lb/day)	CO2 Auto	CO2 Truck	CO2 (lb/day)
2016	B	H	50	424,875.7	56,133.4	1.55	20.00	0.01	0.02	12.00	311.81	1156.02	435135.00
2016	B	H	55	705,953.3	0.0	1.55	20.00	0.01	0.02	16.82	322.94	1140.33	502612.41
2016	B	H	60	1,748,416.5	0.0	1.55	20.00	0.01	0.01	44.69	347.07	1132.33	1337808.93
2016	B	H	65	3,182,371.0	0.0	1.55	20.00	0.01	0.02	91.84	387.02	1135.12	2715290.92
2016	NB	M	5	590.6	77.7	1.55	20.00	0.10	0.21	0.16	1196.24	2542.97	1993.10
2016	NB	M	10	10,515.6	1,383.3	1.55	20.00	0.06	0.16	1.97	890.07	2281.45	27592.02
2016	NB	M	15	38,892.3	5,116.2	1.55	20.00	0.04	0.10	4.68	685.11	1836.08	79453.02
2016	NB	M	20	89,814.1	11,814.8	1.55	20.00	0.03	0.07	7.23	547.11	1579.41	149470.43
2016	NB	M	25	289,515.4	38,084.9	1.55	20.00	0.02	0.05	17.39	454.26	1439.63	410819.45
2016	NB	M	30	1,521,954.7	200,208.8	1.55	20.00	0.02	0.04	72.03	391.54	1342.26	1906195.78
2016	NB	M	35	2,242,038.2	294,933.7	1.55	20.00	0.01	0.03	87.01	350.11	1280.22	2562950.92
2016	NB	M	40	1,311,042.1	172,463.8	1.55	20.00	0.01	0.02	43.56	324.75	1226.37	1404924.75
2016	NB	M	45	520,930.5	68,526.9	1.55	20.00	0.01	0.02	15.54	312.43	1181.37	537291.17
2016	NB	M	50	432,632.5	56,911.6	1.55	20.00	0.01	0.02	12.21	311.81	1156.02	442450.58
2016	NB	M	55	690,056.2	0.0	1.55	20.00	0.01	0.02	16.44	322.94	1140.33	491294.26
2016	NB	M	60	1,746,680.9	0.0	1.55	20.00	0.01	0.01	44.65	347.07	1132.33	1336480.95
2016	NB	M	65	3,182,683.7	0.0	1.55	20.00	0.01	0.02	91.84	387.02	1135.12	2715557.67
2016	NB	H	5	590.6	77.7	1.55	20.00	0.10	0.21	0.16	1196.24	2542.97	1993.10
2016	NB	H	10	10,515.6	1,383.3	1.55	20.00	0.06	0.16	1.97	890.07	2281.45	27592.02
2016	NB	H	15	38,892.3	5,116.2	1.55	20.00	0.04	0.10	4.68	685.11	1836.08	79453.02
2016	NB	H	20	89,814.1	11,814.8	1.55	20.00	0.03	0.07	7.23	547.11	1579.41	149470.43
2016	NB	H	25	289,515.4	38,084.9	1.55	20.00	0.02	0.05	17.39	454.26	1439.63	410819.45
2016	NB	H	30	1,521,954.7	200,208.8	1.55	20.00	0.02	0.04	72.03	391.54	1342.26	1906195.78
2016	NB	H	35	2,242,038.2	294,933.7	1.55	20.00	0.01	0.03	87.01	350.11	1280.22	2562950.92
2016	NB	H	40	1,311,042.1	172,463.8	1.55	20.00	0.01	0.02	43.56	324.75	1226.37	1404924.75
2016	NB	H	45	520,930.5	68,526.9	1.55	20.00	0.01	0.02	15.54	312.43	1181.37	537291.17
2016	NB	H	50	432,632.5	56,911.6	1.55	20.00	0.01	0.02	12.21	311.81	1156.02	442450.58
2016	NB	H	55	690,056.2	0.0	1.55	20.00	0.01	0.02	16.44	322.94	1140.33	491294.26
2016	NB	H	60	1,746,680.9	0.0	1.55	20.00	0.01	0.01	44.65	347.07	1132.33	1336480.95
2016	NB	H	65	3,182,683.7	0.0	1.55	20.00	0.01	0.02	91.84	387.02	1135.12	2715557.67
2020	A	M	5	651.1	89.2	1.55	20.00	0.07	0.17	0.13	1052.06	2521.67	2006.00
2020	A	M	10	10,504.9	1,439.3	1.55	20.00	0.04	0.13	1.46	782.98	2250.85	25275.69
2020	A	M	15	40,849.2	5,597.0	1.55	20.00	0.03	0.09	3.68	602.83	1829.48	76862.92
2020	A	M	20	92,234.7	12,637.5	1.55	20.00	0.02	0.06	5.61	481.48	1584.52	142051.54
2020	A	M	25	274,008.7	37,543.3	1.55	20.00	0.01	0.05	12.37	399.80	1450.99	361613.38
2020	A	M	30	1,480,136.2	202,801.0	1.55	20.00	0.01	0.03	52.13	344.62	1357.73	1731572.28
2020	A	M	35	2,244,935.7	307,590.0	1.55	20.00	0.01	0.03	64.04	308.17	1295.37	2403627.12
2020	A	M	40	1,383,559.7	189,568.5	1.55	20.00	0.01	0.02	33.30	285.86	1241.52	1390808.61
2020	A	M	45	564,346.2	77,323.9	1.55	20.00	0.01	0.02	12.00	275.03	1195.90	546044.40
2020	A	M	50	460,825.8	63,140.1	1.55	20.00	0.01	0.01	9.11	274.48	1166.22	441199.17
2020	A	M	55	808,804.9	0.0	1.55	20.00	0.01	0.01	13.05	284.28	1145.39	506896.96
2020	A	M	60	1,924,291.9	0.0	1.55	20.00	0.01	0.01	33.31	305.51	1135.02	1296077.70
2020	A	M	65	3,206,687.9	0.0	1.55	20.00	0.01	0.01	62.71	340.67	1137.15	2408388.60
2020	A	H	5	756.0	103.2	1.55	20.00	0.07	0.17	0.15	1052.06	2521.67	2327.39
2020	A	H	10	10,397.8	1,419.7	1.55	20.00	0.04	0.13	1.44	782.98	2250.85	24993.40
2020	A	H	15	40,988.8	5,596.5	1.55	20.00	0.03	0.09	3.69	602.83	1829.48	77046.72
2020	A	H	20	92,026.6	12,565.1	1.55	20.00	0.02	0.06	5.59	481.48	1584.52	141577.51
2020	A	H	25	274,122.2	37,427.9	1.55	20.00	0.01	0.05	12.36	399.80	1450.99	361344.21

Mobile Source Emissions Calculation Sheets

YEAR	Alternative	Alignment	Speed	Auto VMT	Truck VMT	Auto Weight (ton)	Truck Weight (Ton)	CH4 Auto	CH4 Truck	CH4 (lb/day)	CO2 Auto	CO2 Truck	CO2 (lb/day)
2020	A	H	30	1,482,469.3	202,412.3	1.55	20.00	0.01	0.03	52.15	344.62	1357.73	1732181.39
2020	A	H	35	2,242,842.1	306,231.5	1.55	20.00	0.01	0.03	63.91	308.17	1295.37	2398325.05
2020	A	H	40	1,382,930.3	188,821.5	1.55	20.00	0.01	0.02	33.26	285.86	1241.52	1388367.23
2020	A	H	45	566,198.4	77,307.2	1.55	20.00	0.01	0.02	12.03	275.03	1195.90	547123.19
2020	A	H	50	479,159.1	65,423.1	1.55	20.00	0.01	0.01	9.47	274.48	1166.22	458162.98
2020	A	H	55	804,117.4	0.0	1.55	20.00	0.01	0.01	12.97	284.28	1145.39	503959.17
2020	A	H	60	1,908,732.7	0.0	1.55	20.00	0.01	0.01	33.04	305.51	1135.02	1285598.02
2020	A	H	65	3,207,076.7	0.0	1.55	20.00	0.01	0.01	62.72	340.67	1137.15	2408680.58
2020	B	M	5	651.6	89.2	1.55	20.00	0.07	0.17	0.13	1052.06	2521.67	2006.91
2020	B	M	10	10,517.4	1,439.3	1.55	20.00	0.04	0.13	1.46	782.98	2250.85	25297.10
2020	B	M	15	40,893.0	5,596.1	1.55	20.00	0.03	0.09	3.68	602.83	1829.48	76917.95
2020	B	M	20	92,748.6	12,692.5	1.55	20.00	0.02	0.06	5.63	481.48	1584.52	142789.02
2020	B	M	25	278,076.9	38,054.3	1.55	20.00	0.01	0.05	12.55	399.80	1450.99	366833.90
2020	B	M	30	1,473,091.7	201,590.0	1.55	20.00	0.01	0.03	51.86	344.62	1357.73	1722595.57
2020	B	M	35	2,252,665.1	308,273.3	1.55	20.00	0.01	0.03	64.23	308.17	1295.37	2410829.73
2020	B	M	40	1,373,459.8	187,955.6	1.55	20.00	0.01	0.02	33.05	285.86	1241.52	1380028.68
2020	B	M	45	569,656.1	77,956.4	1.55	20.00	0.01	0.02	12.11	275.03	1195.90	550931.49
2020	B	M	50	478,370.6	65,464.2	1.55	20.00	0.01	0.01	9.45	274.48	1166.22	457791.56
2020	B	M	55	807,054.8	0.0	1.55	20.00	0.01	0.01	13.02	284.28	1145.39	505800.10
2020	B	M	60	1,904,619.0	0.0	1.55	20.00	0.01	0.01	32.97	305.51	1135.02	1282827.33
2020	B	M	65	3,208,371.9	0.0	1.55	20.00	0.01	0.01	62.75	340.67	1137.15	2409653.37
2020	B	H	5	650.6	89.2	1.55	20.00	0.07	0.17	0.13	1052.06	2521.67	2005.12
2020	B	H	10	10,495.7	1,439.3	1.55	20.00	0.04	0.13	1.46	782.98	2250.85	25260.03
2020	B	H	15	41,114.5	5,638.3	1.55	20.00	0.03	0.09	3.70	602.83	1829.48	77382.35
2020	B	H	20	92,443.8	12,677.4	1.55	20.00	0.02	0.06	5.62	481.48	1584.52	142412.78
2020	B	H	25	272,873.1	37,420.8	1.55	20.00	0.01	0.05	12.32	399.80	1450.99	360220.43
2020	B	H	30	1,475,658.0	202,366.1	1.55	20.00	0.01	0.03	51.98	344.62	1357.73	1726868.35
2020	B	H	35	2,249,619.0	308,504.2	1.55	20.00	0.01	0.03	64.18	308.17	1295.37	2409419.60
2020	B	H	40	1,382,226.9	189,553.3	1.55	20.00	0.01	0.02	33.28	285.86	1241.52	1389927.05
2020	B	H	45	554,321.1	76,017.5	1.55	20.00	0.01	0.02	11.79	275.03	1195.90	536521.44
2020	B	H	50	469,979.9	64,451.3	1.55	20.00	0.01	0.01	9.29	274.48	1166.22	450109.74
2020	B	H	55	821,013.9	0.0	1.55	20.00	0.01	0.01	13.25	284.28	1145.39	514548.58
2020	B	H	60	1,913,518.7	0.0	1.55	20.00	0.01	0.01	33.12	305.51	1135.02	1288821.53
2020	B	H	65	3,207,129.6	0.0	1.55	20.00	0.01	0.01	62.72	340.67	1137.15	2408720.38
2020	NB	M	5	651.0	88.9	1.55	20.00	0.07	0.17	0.13	1052.06	2521.67	2004.29
2020	NB	M	10	10,511.5	1,435.9	1.55	20.00	0.04	0.13	1.46	782.98	2250.85	25270.38
2020	NB	M	15	40,974.7	5,597.4	1.55	20.00	0.03	0.09	3.69	602.83	1829.48	77031.55
2020	NB	M	20	92,193.9	12,594.3	1.55	20.00	0.02	0.06	5.60	481.48	1584.52	141857.07
2020	NB	M	25	281,020.9	38,389.2	1.55	20.00	0.01	0.05	12.67	399.80	1450.99	370499.96
2020	NB	M	30	1,468,779.3	200,644.3	1.55	20.00	0.01	0.03	51.68	344.62	1357.73	1716488.44
2020	NB	M	35	2,251,892.8	307,622.4	1.55	20.00	0.01	0.03	64.18	308.17	1295.37	2408446.36
2020	NB	M	40	1,384,320.6	189,106.7	1.55	20.00	0.01	0.02	33.30	285.86	1241.52	1390024.14
2020	NB	M	45	567,768.9	77,560.7	1.55	20.00	0.01	0.02	12.06	275.03	1195.90	548743.99
2020	NB	M	50	469,846.8	64,184.0	1.55	20.00	0.01	0.01	9.28	274.48	1166.22	449341.98
2020	NB	M	55	809,823.7	0.0	1.55	20.00	0.01	0.01	13.06	284.28	1145.39	507535.43
2020	NB	M	60	1,910,952.1	0.0	1.55	20.00	0.01	0.01	33.08	305.51	1135.02	1287092.85
2020	NB	M	65	3,207,310.8	0.0	1.55	20.00	0.01	0.01	62.72	340.67	1137.15	2408856.45
2020	NB	H	5	651.0	88.9	1.55	20.00	0.07	0.17	0.13	1052.06	2521.67	2004.29

Mobile Source Emissions Calculation Sheets

<u>YEAR</u>	<u>Alternative</u>	<u>Alignment</u>	<u>Speed</u>	<u>Auto VMT</u>	<u>Truck VMT</u>	<u>Auto Weight (ton)</u>	<u>Truck Weight (Ton)</u>	<u>CH4 Auto</u>	<u>CH4 Truck</u>	<u>CH4 (lb/day)</u>	<u>CO2 Auto</u>	<u>CO2 Truck</u>	<u>CO2 (lb/day)</u>
2020	NB	H	10	10,511.5	1,435.9	1.55	20.00	0.04	0.13	1.46	782.98	2250.85	25270.38
2020	NB	H	15	40,974.7	5,597.4	1.55	20.00	0.03	0.09	3.69	602.83	1829.48	77031.55
2020	NB	H	20	92,193.9	12,594.3	1.55	20.00	0.02	0.06	5.60	481.48	1584.52	141857.07
2020	NB	H	25	281,020.9	38,389.2	1.55	20.00	0.01	0.05	12.67	399.80	1450.99	370499.96
2020	NB	H	30	1,468,779.3	200,644.3	1.55	20.00	0.01	0.03	51.68	344.62	1357.73	1716488.44
2020	NB	H	35	2,251,892.8	307,622.4	1.55	20.00	0.01	0.03	64.18	308.17	1295.37	2408446.36
2020	NB	H	40	1,384,320.6	189,106.7	1.55	20.00	0.01	0.02	33.30	285.86	1241.52	1390024.14
2020	NB	H	45	567,768.9	77,560.7	1.55	20.00	0.01	0.02	12.06	275.03	1195.90	548743.99
2020	NB	H	50	469,846.8	64,184.0	1.55	20.00	0.01	0.01	9.28	274.48	1166.22	449341.98
2020	NB	H	55	809,823.7	0.0	1.55	20.00	0.01	0.01	13.06	284.28	1145.39	507535.43
2020	NB	H	60	1,910,952.1	0.0	1.55	20.00	0.01	0.01	33.08	305.51	1135.02	1287092.85
2020	NB	H	65	3,207,310.8	0.0	1.55	20.00	0.01	0.01	62.72	340.67	1137.15	2408856.45
2040	A	M	5	948.0	151.2	1.55	20.00	0.03	0.15	0.11	584.28	2421.91	2028.47
2040	A	M	10	10,520.3	1,677.8	1.55	20.00	0.02	0.12	0.87	435.50	2148.92	18049.38
2040	A	M	15	50,936.7	8,123.6	1.55	20.00	0.01	0.09	2.82	335.37	1768.45	69332.92
2040	A	M	20	104,239.3	16,624.5	1.55	20.00	0.01	0.06	3.97	267.88	1536.13	117860.78
2040	A	M	25	224,451.9	35,796.4	1.55	20.00	0.01	0.05	6.26	222.58	1413.72	221707.70
2040	A	M	30	1,222,254.4	194,929.5	1.55	20.00	0.00	0.03	25.89	191.98	1333.84	1090519.19
2040	A	M	35	2,308,382.6	368,149.1	1.55	20.00	0.00	0.02	38.12	171.76	1276.03	1909777.77
2040	A	M	40	1,744,884.3	278,280.4	1.55	20.00	0.00	0.02	23.14	159.37	1225.06	1364628.40
2040	A	M	45	789,637.5	125,934.2	1.55	20.00	0.00	0.01	8.72	153.31	1183.92	595596.89
2040	A	M	50	666,457.4	106,289.0	1.55	20.00	0.00	0.01	6.41	152.96	1151.40	494551.94
2040	A	M	55	1,363,850.7	0.0	1.55	20.00	0.00	0.01	8.39	158.36	1123.32	476149.90
2040	A	M	60	2,768,278.1	0.0	1.55	20.00	0.00	0.01	18.27	170.10	1108.26	1038135.00
2040	A	M	65	3,330,455.3	0.0	1.55	20.00	0.00	0.01	24.87	189.56	1109.37	1391857.89
2040	A	H	5	1,221.6	194.4	1.55	20.00	0.03	0.15	0.14	584.28	2421.91	2611.76
2040	A	H	10	10,242.0	1,630.3	1.55	20.00	0.02	0.12	0.85	435.50	2148.92	17556.96
2040	A	H	15	51,279.1	8,162.5	1.55	20.00	0.01	0.09	2.83	335.37	1768.45	69738.03
2040	A	H	20	103,817.3	16,525.5	1.55	20.00	0.01	0.06	3.95	267.88	1536.13	117276.41
2040	A	H	25	223,069.1	35,507.8	1.55	20.00	0.01	0.05	6.22	222.58	1413.72	220129.57
2040	A	H	30	1,225,706.4	195,105.9	1.55	20.00	0.00	0.03	25.94	191.98	1333.84	1092499.04
2040	A	H	35	2,307,440.6	367,294.6	1.55	20.00	0.00	0.02	38.06	171.76	1276.03	1907017.03
2040	A	H	40	1,746,484.0	278,002.4	1.55	20.00	0.00	0.02	23.14	159.37	1225.06	1364439.71
2040	A	H	45	788,481.9	125,509.3	1.55	20.00	0.00	0.01	8.70	153.31	1183.92	594097.12
2040	A	H	50	677,913.0	107,909.1	1.55	20.00	0.00	0.01	6.52	152.96	1151.40	502527.45
2040	A	H	55	1,393,665.1	0.0	1.55	20.00	0.00	0.01	8.57	158.36	1123.32	486558.75
2040	A	H	60	2,725,915.5	0.0	1.55	20.00	0.00	0.01	17.99	170.10	1108.26	1022248.56
2040	A	H	65	3,330,735.6	0.0	1.55	20.00	0.00	0.01	24.87	189.56	1109.37	1391975.02
2040	B	M	5	948.3	151.8	1.55	20.00	0.03	0.15	0.11	584.28	2421.91	2031.88
2040	B	M	10	10,536.1	1,686.1	1.55	20.00	0.02	0.12	0.88	435.50	2148.92	18103.77
2040	B	M	15	51,006.6	8,162.7	1.55	20.00	0.01	0.09	2.82	335.37	1768.45	69537.08
2040	B	M	20	104,026.4	16,647.5	1.55	20.00	0.01	0.06	3.97	267.88	1536.13	117813.21
2040	B	M	25	236,321.3	37,818.9	1.55	20.00	0.01	0.05	6.61	222.58	1413.72	233835.76
2040	B	M	30	1,220,915.5	195,385.2	1.55	20.00	0.00	0.03	25.92	191.98	1333.84	1091292.54
2040	B	M	35	2,312,458.6	370,066.7	1.55	20.00	0.00	0.02	38.25	171.76	1276.03	1916715.64
2040	B	M	40	1,712,912.5	274,120.3	1.55	20.00	0.00	0.02	22.75	159.37	1225.06	1342159.80
2040	B	M	45	802,939.1	128,495.7	1.55	20.00	0.00	0.01	8.88	153.31	1183.92	606778.54
2040	B	M	50	674,742.7	107,980.2	1.55	20.00	0.00	0.01	6.50	152.96	1151.40	501638.96

Mobile Source Emissions Calculation Sheets

<u>YEAR</u>	<u>Alternative</u>	<u>Alignment</u>	<u>Speed</u>	<u>Auto VMT</u>	<u>Truck VMT</u>	<u>Auto Weight (ton)</u>	<u>Truck Weight (Ton)</u>	<u>CH4 Auto</u>	<u>CH4 Truck</u>	<u>CH4 (lb/day)</u>	<u>CO2 Auto</u>	<u>CO2 Truck</u>	<u>CO2 (lb/day)</u>
2040	B	M	55	1,401,419.8	0.0	1.55	20.00	0.00	0.01	8.62	158.36	1123.32	489266.06
2040	B	M	60	2,715,166.3	0.0	1.55	20.00	0.00	0.01	17.92	170.10	1108.26	1018217.46
2040	B	M	65	3,334,396.1	0.0	1.55	20.00	0.00	0.01	24.90	189.56	1109.37	1393504.83
2040	B	H	5	946.7	151.3	1.55	20.00	0.03	0.15	0.11	584.28	2421.91	2027.33
2040	B	H	10	10,518.7	1,681.2	1.55	20.00	0.02	0.12	0.87	435.50	2148.92	18063.63
2040	B	H	15	51,610.2	8,248.6	1.55	20.00	0.01	0.09	2.86	335.37	1768.45	70318.19
2040	B	H	20	104,978.5	16,778.1	1.55	20.00	0.01	0.06	4.00	267.88	1536.13	118817.73
2040	B	H	25	220,063.5	35,171.5	1.55	20.00	0.01	0.05	6.15	222.58	1413.72	217606.61
2040	B	H	30	1,229,845.8	196,559.1	1.55	20.00	0.00	0.03	26.09	191.98	1333.84	1098524.34
2040	B	H	35	2,305,238.9	368,433.0	1.55	20.00	0.00	0.02	38.11	171.76	1276.03	1909385.91
2040	B	H	40	1,746,310.2	279,102.7	1.55	20.00	0.00	0.02	23.18	159.37	1225.06	1367350.13
2040	B	H	45	757,728.3	121,103.3	1.55	20.00	0.00	0.01	8.38	153.31	1183.92	572202.55
2040	B	H	50	691,088.6	110,452.7	1.55	20.00	0.00	0.01	6.65	152.96	1151.40	513427.37
2040	B	H	55	1,396,316.9	0.0	1.55	20.00	0.00	0.01	8.59	158.36	1123.32	487484.52
2040	B	H	60	2,739,029.6	0.0	1.55	20.00	0.00	0.01	18.08	170.10	1108.26	1027166.48
2040	B	H	65	3,330,922.8	0.0	1.55	20.00	0.00	0.01	24.87	189.56	1109.37	1392053.25
2040	NB	M	5	947.0	151.1	1.55	20.00	0.03	0.15	0.11	584.28	2421.91	2026.62
2040	NB	M	10	10,512.9	1,677.4	1.55	20.00	0.02	0.12	0.87	435.50	2148.92	18040.12
2040	NB	M	15	51,218.3	8,172.1	1.55	20.00	0.01	0.09	2.83	335.37	1768.45	69730.49
2040	NB	M	20	103,992.4	16,592.5	1.55	20.00	0.01	0.06	3.96	267.88	1536.13	117606.85
2040	NB	M	25	240,143.0	38,316.1	1.55	20.00	0.01	0.05	6.70	222.58	1413.72	237260.52
2040	NB	M	30	1,212,296.2	193,428.1	1.55	20.00	0.00	0.03	25.69	191.98	1333.84	1081889.50
2040	NB	M	35	2,304,532.1	367,700.0	1.55	20.00	0.00	0.02	38.06	171.76	1276.03	1907056.20
2040	NB	M	40	1,744,664.2	278,370.2	1.55	20.00	0.00	0.02	23.14	159.37	1225.06	1364793.55
2040	NB	M	45	797,453.1	127,237.8	1.55	20.00	0.00	0.01	8.81	153.31	1183.92	601640.94
2040	NB	M	50	652,374.2	104,089.7	1.55	20.00	0.00	0.01	6.28	152.96	1151.40	484219.92
2040	NB	M	55	1,408,661.3	0.0	1.55	20.00	0.00	0.01	8.66	158.36	1123.32	491794.22
2040	NB	M	60	2,732,308.0	0.0	1.55	20.00	0.00	0.01	18.03	170.10	1108.26	1024645.79
2040	NB	M	65	3,330,446.6	0.0	1.55	20.00	0.00	0.01	24.87	189.56	1109.37	1391854.27
2040	NB	H	5	947.0	151.1	1.55	20.00	0.03	0.15	0.11	584.28	2421.91	2026.62
2040	NB	H	10	10,512.9	1,677.4	1.55	20.00	0.02	0.12	0.87	435.50	2148.92	18040.12
2040	NB	H	15	51,218.3	8,172.1	1.55	20.00	0.01	0.09	2.83	335.37	1768.45	69730.49
2040	NB	H	20	103,992.4	16,592.5	1.55	20.00	0.01	0.06	3.96	267.88	1536.13	117606.85
2040	NB	H	25	240,143.0	38,316.1	1.55	20.00	0.01	0.05	6.70	222.58	1413.72	237260.52
2040	NB	H	30	1,212,296.2	193,428.1	1.55	20.00	0.00	0.03	25.69	191.98	1333.84	1081889.50
2040	NB	H	35	2,304,532.1	367,700.0	1.55	20.00	0.00	0.02	38.06	171.76	1276.03	1907056.20
2040	NB	H	40	1,744,664.2	278,370.2	1.55	20.00	0.00	0.02	23.14	159.37	1225.06	1364793.55
2040	NB	H	45	797,453.1	127,237.8	1.55	20.00	0.00	0.01	8.81	153.31	1183.92	601640.94
2040	NB	H	50	652,374.2	104,089.7	1.55	20.00	0.00	0.01	6.28	152.96	1151.40	484219.92
2040	NB	H	55	1,408,661.3	0.0	1.55	20.00	0.00	0.01	8.66	158.36	1123.32	491794.22
2040	NB	H	60	2,732,308.0	0.0	1.55	20.00	0.00	0.01	18.03	170.10	1108.26	1024645.79
2040	NB	H	65	3,330,446.6	0.0	1.55	20.00	0.00	0.01	24.87	189.56	1109.37	1391854.27

EMFAC2014 Emissions Factors Data

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate
2016	San Bernardino (SC)	NT	PMBW		PM10	0.038327535
2016	San Bernardino (SC)	NT	PMBW		PM2_5	0.016426086
2016	San Bernardino (SC)	NT	PMTW		PM10	0.008003913
2016	San Bernardino (SC)	NT	PMTW		PM2_5	0.002000978
2016	San Bernardino (SC)	NT	RUNEX	5 CH4		0.096623264
2016	San Bernardino (SC)	NT	RUNEX	10 CH4		0.064125989
2016	San Bernardino (SC)	NT	RUNEX	15 CH4		0.041366026
2016	San Bernardino (SC)	NT	RUNEX	20 CH4		0.027871736
2016	San Bernardino (SC)	NT	RUNEX	25 CH4		0.020863935
2016	San Bernardino (SC)	NT	RUNEX	30 CH4		0.016553672
2016	San Bernardino (SC)	NT	RUNEX	35 CH4		0.013759638
2016	San Bernardino (SC)	NT	RUNEX	40 CH4		0.011998308
2016	San Bernardino (SC)	NT	RUNEX	45 CH4		0.01099825
2016	San Bernardino (SC)	NT	RUNEX	50 CH4		0.010618102
2016	San Bernardino (SC)	NT	RUNEX	55 CH4		0.010807027
2016	San Bernardino (SC)	NT	RUNEX	60 CH4		0.011594279
2016	San Bernardino (SC)	NT	RUNEX	65 CH4		0.013089506
2016	San Bernardino (SC)	NT	RUNEX	5 CO		2.948252571
2016	San Bernardino (SC)	NT	RUNEX	10 CO		2.515224988
2016	San Bernardino (SC)	NT	RUNEX	15 CO		2.184726627
2016	San Bernardino (SC)	NT	RUNEX	20 CO		1.932718217
2016	San Bernardino (SC)	NT	RUNEX	25 CO		1.73822732
2016	San Bernardino (SC)	NT	RUNEX	30 CO		1.58287049
2016	San Bernardino (SC)	NT	RUNEX	35 CO		1.45720265
2016	San Bernardino (SC)	NT	RUNEX	40 CO		1.35611305
2016	San Bernardino (SC)	NT	RUNEX	45 CO		1.276799945
2016	San Bernardino (SC)	NT	RUNEX	50 CO		1.218397306
2016	San Bernardino (SC)	NT	RUNEX	55 CO		1.18207245
2016	San Bernardino (SC)	NT	RUNEX	60 CO		1.171690764
2016	San Bernardino (SC)	NT	RUNEX	65 CO		1.195084755
2016	San Bernardino (SC)	NT	RUNEX	5 CO2		1196.241392
2016	San Bernardino (SC)	NT	RUNEX	10 CO2		890.0669057
2016	San Bernardino (SC)	NT	RUNEX	15 CO2		685.1124527
2016	San Bernardino (SC)	NT	RUNEX	20 CO2		547.1105661
2016	San Bernardino (SC)	NT	RUNEX	25 CO2		454.2628123
2016	San Bernardino (SC)	NT	RUNEX	30 CO2		391.5381366
2016	San Bernardino (SC)	NT	RUNEX	35 CO2		350.107689
2016	San Bernardino (SC)	NT	RUNEX	40 CO2		324.7475319
2016	San Bernardino (SC)	NT	RUNEX	45 CO2		312.4318414
2016	San Bernardino (SC)	NT	RUNEX	50 CO2		311.8148443
2016	San Bernardino (SC)	NT	RUNEX	55 CO2		322.9405921
2016	San Bernardino (SC)	NT	RUNEX	60 CO2		347.0680094
2016	San Bernardino (SC)	NT	RUNEX	65 CO2		387.0178014
2016	San Bernardino (SC)	NT	RUNEX	5 NOx		0.294104564

EMFAC2014 Emissions Factors Data

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate
2016	San Bernardino (SC)	NT	RUNEX	10	NOx	0.251600825
2016	San Bernardino (SC)	NT	RUNEX	15	NOx	0.212996322
2016	San Bernardino (SC)	NT	RUNEX	20	NOx	0.187154628
2016	San Bernardino (SC)	NT	RUNEX	25	NOx	0.171447055
2016	San Bernardino (SC)	NT	RUNEX	30	NOx	0.160429933
2016	San Bernardino (SC)	NT	RUNEX	35	NOx	0.152725523
2016	San Bernardino (SC)	NT	RUNEX	40	NOx	0.147818219
2016	San Bernardino (SC)	NT	RUNEX	45	NOx	0.145399209
2016	San Bernardino (SC)	NT	RUNEX	50	NOx	0.145319588
2016	San Bernardino (SC)	NT	RUNEX	55	NOx	0.147573573
2016	San Bernardino (SC)	NT	RUNEX	60	NOx	0.152262277
2016	San Bernardino (SC)	NT	RUNEX	65	NOx	0.15964389
2016	San Bernardino (SC)	NT	RUNEX	5	PM10	0.013060363
2016	San Bernardino (SC)	NT	RUNEX	10	PM10	0.008565539
2016	San Bernardino (SC)	NT	RUNEX	15	PM10	0.005792681
2016	San Bernardino (SC)	NT	RUNEX	20	PM10	0.00410389
2016	San Bernardino (SC)	NT	RUNEX	25	PM10	0.003098342
2016	San Bernardino (SC)	NT	RUNEX	30	PM10	0.002467306
2016	San Bernardino (SC)	NT	RUNEX	35	PM10	0.002063172
2016	San Bernardino (SC)	NT	RUNEX	40	PM10	0.001813238
2016	San Bernardino (SC)	NT	RUNEX	45	PM10	0.001676784
2016	San Bernardino (SC)	NT	RUNEX	50	PM10	0.001632708
2016	San Bernardino (SC)	NT	RUNEX	55	PM10	0.001673553
2016	San Bernardino (SC)	NT	RUNEX	60	PM10	0.001798282
2016	San Bernardino (SC)	NT	RUNEX	65	PM10	0.00202075
2016	San Bernardino (SC)	NT	RUNEX	5	PM2_5	0.012073358
2016	San Bernardino (SC)	NT	RUNEX	10	PM2_5	0.007926224
2016	San Bernardino (SC)	NT	RUNEX	15	PM2_5	0.005361611
2016	San Bernardino (SC)	NT	RUNEX	20	PM2_5	0.003798632
2016	San Bernardino (SC)	NT	RUNEX	25	PM2_5	0.002869086
2016	San Bernardino (SC)	NT	RUNEX	30	PM2_5	0.002285814
2016	San Bernardino (SC)	NT	RUNEX	35	PM2_5	0.001912133
2016	San Bernardino (SC)	NT	RUNEX	40	PM2_5	0.001681047
2016	San Bernardino (SC)	NT	RUNEX	45	PM2_5	0.001555032
2016	San Bernardino (SC)	NT	RUNEX	50	PM2_5	0.001514649
2016	San Bernardino (SC)	NT	RUNEX	55	PM2_5	0.001553042
2016	San Bernardino (SC)	NT	RUNEX	60	PM2_5	0.001669097
2016	San Bernardino (SC)	NT	RUNEX	65	PM2_5	0.001875515
2016	San Bernardino (SC)	NT	RUNEX	5	ROG	0.266334193
2016	San Bernardino (SC)	NT	RUNEX	10	ROG	0.174724378
2016	San Bernardino (SC)	NT	RUNEX	15	ROG	0.119274549
2016	San Bernardino (SC)	NT	RUNEX	20	ROG	0.085610292
2016	San Bernardino (SC)	NT	RUNEX	25	ROG	0.065128691
2016	San Bernardino (SC)	NT	RUNEX	30	ROG	0.052155887

EMFAC2014 Emissions Factors Data

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate
2016	San Bernardino (SC)	NT	RUNEX	35	ROG	0.043871083
2016	San Bernardino (SC)	NT	RUNEX	40	ROG	0.038758316
2016	San Bernardino (SC)	NT	RUNEX	45	ROG	0.035967374
2016	San Bernardino (SC)	NT	RUNEX	50	ROG	0.035065627
2016	San Bernardino (SC)	NT	RUNEX	55	ROG	0.035919869
2016	San Bernardino (SC)	NT	RUNEX	60	ROG	0.038659489
2016	San Bernardino (SC)	NT	RUNEX	65	ROG	0.043707464
2016	San Bernardino (SC)	NT	RUNEX	5	SOx	0.011970516
2016	San Bernardino (SC)	NT	RUNEX	10	SOx	0.008907245
2016	San Bernardino (SC)	NT	RUNEX	15	SOx	0.00685857
2016	San Bernardino (SC)	NT	RUNEX	20	SOx	0.005479328
2016	San Bernardino (SC)	NT	RUNEX	25	SOx	0.004550482
2016	San Bernardino (SC)	NT	RUNEX	30	SOx	0.003922468
2016	San Bernardino (SC)	NT	RUNEX	35	SOx	0.003507417
2016	San Bernardino (SC)	NT	RUNEX	40	SOx	0.003253086
2016	San Bernardino (SC)	NT	RUNEX	45	SOx	0.00312921
2016	San Bernardino (SC)	NT	RUNEX	50	SOx	0.003122328
2016	San Bernardino (SC)	NT	RUNEX	55	SOx	0.003232888
2016	San Bernardino (SC)	NT	RUNEX	60	SOx	0.00347352
2016	San Bernardino (SC)	NT	RUNEX	65	SOx	0.003872503
2016	San Bernardino (SC)	NT	RUNLOSS		ROG	2.247442243
2016	San Bernardino (SC)	T	PMBW		PM10	0.08322694
2016	San Bernardino (SC)	T	PMBW		PM2_5	0.035668689
2016	San Bernardino (SC)	T	PMTW		PM10	0.022114007
2016	San Bernardino (SC)	T	PMTW		PM2_5	0.005528502
2016	San Bernardino (SC)	T	RUNEX	5	CH4	0.207419681
2016	San Bernardino (SC)	T	RUNEX	10	CH4	0.157541154
2016	San Bernardino (SC)	T	RUNEX	15	CH4	0.10025395
2016	San Bernardino (SC)	T	RUNEX	20	CH4	0.065527651
2016	San Bernardino (SC)	T	RUNEX	25	CH4	0.048533784
2016	San Bernardino (SC)	T	RUNEX	30	CH4	0.037344235
2016	San Bernardino (SC)	T	RUNEX	35	CH4	0.02921359
2016	San Bernardino (SC)	T	RUNEX	40	CH4	0.023365068
2016	San Bernardino (SC)	T	RUNEX	45	CH4	0.019270588
2016	San Bernardino (SC)	T	RUNEX	50	CH4	0.016572569
2016	San Bernardino (SC)	T	RUNEX	55	CH4	0.015037714
2016	San Bernardino (SC)	T	RUNEX	60	CH4	0.014968851
2016	San Bernardino (SC)	T	RUNEX	65	CH4	0.015878287
2016	San Bernardino (SC)	T	RUNEX	5	CO	4.722287812
2016	San Bernardino (SC)	T	RUNEX	10	CO	3.804004112
2016	San Bernardino (SC)	T	RUNEX	15	CO	2.766368763
2016	San Bernardino (SC)	T	RUNEX	20	CO	2.083372263
2016	San Bernardino (SC)	T	RUNEX	25	CO	1.679922943
2016	San Bernardino (SC)	T	RUNEX	30	CO	1.403435551

EMFAC2014 Emissions Factors Data

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate
2016	San Bernardino (SC)	T	RUNEX	35	CO	1.199517984
2016	San Bernardino (SC)	T	RUNEX	40	CO	1.05252124
2016	San Bernardino (SC)	T	RUNEX	45	CO	0.952482048
2016	San Bernardino (SC)	T	RUNEX	50	CO	0.893853131
2016	San Bernardino (SC)	T	RUNEX	55	CO	0.875088782
2016	San Bernardino (SC)	T	RUNEX	60	CO	0.905591462
2016	San Bernardino (SC)	T	RUNEX	65	CO	0.983606272
2016	San Bernardino (SC)	T	RUNEX	5	CO2	2542.974426
2016	San Bernardino (SC)	T	RUNEX	10	CO2	2281.449946
2016	San Bernardino (SC)	T	RUNEX	15	CO2	1836.077917
2016	San Bernardino (SC)	T	RUNEX	20	CO2	1579.408401
2016	San Bernardino (SC)	T	RUNEX	25	CO2	1439.633683
2016	San Bernardino (SC)	T	RUNEX	30	CO2	1342.258012
2016	San Bernardino (SC)	T	RUNEX	35	CO2	1280.217257
2016	San Bernardino (SC)	T	RUNEX	40	CO2	1226.372784
2016	San Bernardino (SC)	T	RUNEX	45	CO2	1181.371035
2016	San Bernardino (SC)	T	RUNEX	50	CO2	1156.017978
2016	San Bernardino (SC)	T	RUNEX	55	CO2	1140.330274
2016	San Bernardino (SC)	T	RUNEX	60	CO2	1132.33135
2016	San Bernardino (SC)	T	RUNEX	65	CO2	1135.117718
2016	San Bernardino (SC)	T	RUNEX	5	NOx	11.97582878
2016	San Bernardino (SC)	T	RUNEX	10	NOx	9.99065098
2016	San Bernardino (SC)	T	RUNEX	15	NOx	7.356420225
2016	San Bernardino (SC)	T	RUNEX	20	NOx	5.731950772
2016	San Bernardino (SC)	T	RUNEX	25	NOx	4.930362994
2016	San Bernardino (SC)	T	RUNEX	30	NOx	4.490104097
2016	San Bernardino (SC)	T	RUNEX	35	NOx	4.194721667
2016	San Bernardino (SC)	T	RUNEX	40	NOx	3.989406671
2016	San Bernardino (SC)	T	RUNEX	45	NOx	3.847697728
2016	San Bernardino (SC)	T	RUNEX	50	NOx	3.75529306
2016	San Bernardino (SC)	T	RUNEX	55	NOx	3.703841029
2016	San Bernardino (SC)	T	RUNEX	60	NOx	3.704399869
2016	San Bernardino (SC)	T	RUNEX	65	NOx	3.733515443
2016	San Bernardino (SC)	T	RUNEX	5	PM10	0.172258001
2016	San Bernardino (SC)	T	RUNEX	10	PM10	0.143955517
2016	San Bernardino (SC)	T	RUNEX	15	PM10	0.1043985
2016	San Bernardino (SC)	T	RUNEX	20	PM10	0.077009127
2016	San Bernardino (SC)	T	RUNEX	25	PM10	0.064782754
2016	San Bernardino (SC)	T	RUNEX	30	PM10	0.057878807
2016	San Bernardino (SC)	T	RUNEX	35	PM10	0.053615596
2016	San Bernardino (SC)	T	RUNEX	40	PM10	0.051847942
2016	San Bernardino (SC)	T	RUNEX	45	PM10	0.052504323
2016	San Bernardino (SC)	T	RUNEX	50	PM10	0.055563557
2016	San Bernardino (SC)	T	RUNEX	55	PM10	0.061044179

EMFAC2014 Emissions Factors Data

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate
2016	San Bernardino (SC)	T	RUNEX	60	PM10	0.064832624
2016	San Bernardino (SC)	T	RUNEX	65	PM10	0.06541142
2016	San Bernardino (SC)	T	RUNEX	5	PM2_5	0.164741394
2016	San Bernardino (SC)	T	RUNEX	10	PM2_5	0.137686776
2016	San Bernardino (SC)	T	RUNEX	15	PM2_5	0.099854514
2016	San Bernardino (SC)	T	RUNEX	20	PM2_5	0.073658069
2016	San Bernardino (SC)	T	RUNEX	25	PM2_5	0.061965569
2016	San Bernardino (SC)	T	RUNEX	30	PM2_5	0.055363399
2016	San Bernardino (SC)	T	RUNEX	35	PM2_5	0.051286573
2016	San Bernardino (SC)	T	RUNEX	40	PM2_5	0.049596583
2016	San Bernardino (SC)	T	RUNEX	45	PM2_5	0.050225222
2016	San Bernardino (SC)	T	RUNEX	50	PM2_5	0.05315233
2016	San Bernardino (SC)	T	RUNEX	55	PM2_5	0.05839568
2016	San Bernardino (SC)	T	RUNEX	60	PM2_5	0.062019627
2016	San Bernardino (SC)	T	RUNEX	65	PM2_5	0.062572245
2016	San Bernardino (SC)	T	RUNEX	5	ROG	1.533100926
2016	San Bernardino (SC)	T	RUNEX	10	ROG	1.170764671
2016	San Bernardino (SC)	T	RUNEX	15	ROG	0.697151724
2016	San Bernardino (SC)	T	RUNEX	20	ROG	0.416087587
2016	San Bernardino (SC)	T	RUNEX	25	ROG	0.306855101
2016	San Bernardino (SC)	T	RUNEX	30	ROG	0.239497474
2016	San Bernardino (SC)	T	RUNEX	35	ROG	0.189750915
2016	San Bernardino (SC)	T	RUNEX	40	ROG	0.153824935
2016	San Bernardino (SC)	T	RUNEX	45	ROG	0.1291046
2016	San Bernardino (SC)	T	RUNEX	50	ROG	0.113775028
2016	San Bernardino (SC)	T	RUNEX	55	ROG	0.106601171
2016	San Bernardino (SC)	T	RUNEX	60	ROG	0.107548289
2016	San Bernardino (SC)	T	RUNEX	65	ROG	0.112119984
2016	San Bernardino (SC)	T	RUNEX	5	SOx	0.024139311
2016	San Bernardino (SC)	T	RUNEX	10	SOx	0.021664437
2016	San Bernardino (SC)	T	RUNEX	15	SOx	0.017412021
2016	San Bernardino (SC)	T	RUNEX	20	SOx	0.014972932
2016	San Bernardino (SC)	T	RUNEX	25	SOx	0.013645816
2016	San Bernardino (SC)	T	RUNEX	30	SOx	0.012719075
2016	San Bernardino (SC)	T	RUNEX	35	SOx	0.012133128
2016	San Bernardino (SC)	T	RUNEX	40	SOx	0.011623987
2016	San Bernardino (SC)	T	RUNEX	45	SOx	0.011198417
2016	San Bernardino (SC)	T	RUNEX	50	SOx	0.010962873
2016	San Bernardino (SC)	T	RUNEX	55	SOx	0.010819556
2016	San Bernardino (SC)	T	RUNEX	60	SOx	0.010746095
2016	San Bernardino (SC)	T	RUNEX	65	SOx	0.010774352
2016	San Bernardino (SC)	T	RUNLOSS		ROG	5.853650616
2020	San Bernardino (SC)	NT	PMBW		PM10	0.038197305
2020	San Bernardino (SC)	NT	PMBW		PM2_5	0.016370274

EMFAC2014 Emissions Factors Data

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate
2020	San Bernardino (SC)	NT	PMTW		PM10	0.008002473
2020	San Bernardino (SC)	NT	PMTW		PM2_5	0.002000618
2020	San Bernardino (SC)	NT	RUNEX	5 CH4		0.067452288
2020	San Bernardino (SC)	NT	RUNEX	10 CH4		0.044636606
2020	San Bernardino (SC)	NT	RUNEX	15 CH4		0.028599631
2020	San Bernardino (SC)	NT	RUNEX	20 CH4		0.019115354
2020	San Bernardino (SC)	NT	RUNEX	25 CH4		0.014238065
2020	San Bernardino (SC)	NT	RUNEX	30 CH4		0.011264266
2020	San Bernardino (SC)	NT	RUNEX	35 CH4		0.009345543
2020	San Bernardino (SC)	NT	RUNEX	40 CH4		0.008139562
2020	San Bernardino (SC)	NT	RUNEX	45 CH4		0.007455164
2020	San Bernardino (SC)	NT	RUNEX	50 CH4		0.007193104
2020	San Bernardino (SC)	NT	RUNEX	55 CH4		0.007317686
2020	San Bernardino (SC)	NT	RUNEX	60 CH4		0.007851633
2020	San Bernardino (SC)	NT	RUNEX	65 CH4		0.008870762
2020	San Bernardino (SC)	NT	RUNEX	5 CO		1.900707545
2020	San Bernardino (SC)	NT	RUNEX	10 CO		1.648021735
2020	San Bernardino (SC)	NT	RUNEX	15 CO		1.443101921
2020	San Bernardino (SC)	NT	RUNEX	20 CO		1.283854025
2020	San Bernardino (SC)	NT	RUNEX	25 CO		1.160359297
2020	San Bernardino (SC)	NT	RUNEX	30 CO		1.059566917
2020	San Bernardino (SC)	NT	RUNEX	35 CO		0.975797429
2020	San Bernardino (SC)	NT	RUNEX	40 CO		0.906217332
2020	San Bernardino (SC)	NT	RUNEX	45 CO		0.849149503
2020	San Bernardino (SC)	NT	RUNEX	50 CO		0.803864032
2020	San Bernardino (SC)	NT	RUNEX	55 CO		0.770601963
2020	San Bernardino (SC)	NT	RUNEX	60 CO		0.750910861
2020	San Bernardino (SC)	NT	RUNEX	65 CO		0.748094567
2020	San Bernardino (SC)	NT	RUNEX	5 CO2		1052.063381
2020	San Bernardino (SC)	NT	RUNEX	10 CO2		782.9840734
2020	San Bernardino (SC)	NT	RUNEX	15 CO2		602.8255653
2020	San Bernardino (SC)	NT	RUNEX	20 CO2		481.4787904
2020	San Bernardino (SC)	NT	RUNEX	25 CO2		399.8042277
2020	San Bernardino (SC)	NT	RUNEX	30 CO2		344.6158302
2020	San Bernardino (SC)	NT	RUNEX	35 CO2		308.1712104
2020	San Bernardino (SC)	NT	RUNEX	40 CO2		285.8622367
2020	San Bernardino (SC)	NT	RUNEX	45 CO2		275.0255992
2020	San Bernardino (SC)	NT	RUNEX	50 CO2		274.4832361
2020	San Bernardino (SC)	NT	RUNEX	55 CO2		284.2767071
2020	San Bernardino (SC)	NT	RUNEX	60 CO2		305.5100264
2020	San Bernardino (SC)	NT	RUNEX	65 CO2		340.6710712
2020	San Bernardino (SC)	NT	RUNEX	5 NOx		0.190331528
2020	San Bernardino (SC)	NT	RUNEX	10 NOx		0.162434778
2020	San Bernardino (SC)	NT	RUNEX	15 NOx		0.136450054

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calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate
2020	San Bernardino (SC)	NT	RUNEX	20	NOx	0.118913002
2020	San Bernardino (SC)	NT	RUNEX	25	NOx	0.108154146
2020	San Bernardino (SC)	NT	RUNEX	30	NOx	0.100666224
2020	San Bernardino (SC)	NT	RUNEX	35	NOx	0.095385919
2020	San Bernardino (SC)	NT	RUNEX	40	NOx	0.091925222
2020	San Bernardino (SC)	NT	RUNEX	45	NOx	0.090058586
2020	San Bernardino (SC)	NT	RUNEX	50	NOx	0.089672081
2020	San Bernardino (SC)	NT	RUNEX	55	NOx	0.0907443
2020	San Bernardino (SC)	NT	RUNEX	60	NOx	0.093347203
2020	San Bernardino (SC)	NT	RUNEX	65	NOx	0.097611904
2020	San Bernardino (SC)	NT	RUNEX	5	PM10	0.012620383
2020	San Bernardino (SC)	NT	RUNEX	10	PM10	0.008132416
2020	San Bernardino (SC)	NT	RUNEX	15	PM10	0.005461774
2020	San Bernardino (SC)	NT	RUNEX	20	PM10	0.003855038
2020	San Bernardino (SC)	NT	RUNEX	25	PM10	0.00288609
2020	San Bernardino (SC)	NT	RUNEX	30	PM10	0.002279559
2020	San Bernardino (SC)	NT	RUNEX	35	PM10	0.001894454
2020	San Bernardino (SC)	NT	RUNEX	40	PM10	0.001657021
2020	San Bernardino (SC)	NT	RUNEX	45	PM10	0.001526087
2020	San Bernardino (SC)	NT	RUNEX	50	PM10	0.001480308
2020	San Bernardino (SC)	NT	RUNEX	55	PM10	0.001512009
2020	San Bernardino (SC)	NT	RUNEX	60	PM10	0.001623448
2020	San Bernardino (SC)	NT	RUNEX	65	PM10	0.001829914
2020	San Bernardino (SC)	NT	RUNEX	5	PM2_5	0.01163578
2020	San Bernardino (SC)	NT	RUNEX	10	PM2_5	0.007502853
2020	San Bernardino (SC)	NT	RUNEX	15	PM2_5	0.005040002
2020	San Bernardino (SC)	NT	RUNEX	20	PM2_5	0.003557643
2020	San Bernardino (SC)	NT	RUNEX	25	PM2_5	0.002664265
2020	San Bernardino (SC)	NT	RUNEX	30	PM2_5	0.00210507
2020	San Bernardino (SC)	NT	RUNEX	35	PM2_5	0.001749938
2020	San Bernardino (SC)	NT	RUNEX	40	PM2_5	0.001530983
2020	San Bernardino (SC)	NT	RUNEX	45	PM2_5	0.00141031
2020	San Bernardino (SC)	NT	RUNEX	50	PM2_5	0.001368276
2020	San Bernardino (SC)	NT	RUNEX	55	PM2_5	0.001397819
2020	San Bernardino (SC)	NT	RUNEX	60	PM2_5	0.001500966
2020	San Bernardino (SC)	NT	RUNEX	65	PM2_5	0.001691757
2020	San Bernardino (SC)	NT	RUNEX	5	ROG	0.173646556
2020	San Bernardino (SC)	NT	RUNEX	10	ROG	0.112731717
2020	San Bernardino (SC)	NT	RUNEX	15	ROG	0.076074031
2020	San Bernardino (SC)	NT	RUNEX	20	ROG	0.054003878
2020	San Bernardino (SC)	NT	RUNEX	25	ROG	0.040700117
2020	San Bernardino (SC)	NT	RUNEX	30	ROG	0.032327051
2020	San Bernardino (SC)	NT	RUNEX	35	ROG	0.026997759
2020	San Bernardino (SC)	NT	RUNEX	40	ROG	0.023705474

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calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate
2020	San Bernardino (SC)	NT	RUNEX	45	ROG	0.021886574
2020	San Bernardino (SC)	NT	RUNEX	50	ROG	0.021251691
2020	San Bernardino (SC)	NT	RUNEX	55	ROG	0.021704858
2020	San Bernardino (SC)	NT	RUNEX	60	ROG	0.023321192
2020	San Bernardino (SC)	NT	RUNEX	65	ROG	0.026355641
2020	San Bernardino (SC)	NT	RUNEX	5	SOx	0.010512329
2020	San Bernardino (SC)	NT	RUNEX	10	SOx	0.007823261
2020	San Bernardino (SC)	NT	RUNEX	15	SOx	0.006024635
2020	San Bernardino (SC)	NT	RUNEX	20	SOx	0.004813415
2020	San Bernardino (SC)	NT	RUNEX	25	SOx	0.003997431
2020	San Bernardino (SC)	NT	RUNEX	30	SOx	0.003445649
2020	San Bernardino (SC)	NT	RUNEX	35	SOx	0.003081107
2020	San Bernardino (SC)	NT	RUNEX	40	SOx	0.002857772
2020	San Bernardino (SC)	NT	RUNEX	45	SOx	0.002749029
2020	San Bernardino (SC)	NT	RUNEX	50	SOx	0.002743096
2020	San Bernardino (SC)	NT	RUNEX	55	SOx	0.002840382
2020	San Bernardino (SC)	NT	RUNEX	60	SOx	0.003051933
2020	San Bernardino (SC)	NT	RUNEX	65	SOx	0.003402627
2020	San Bernardino (SC)	NT	RUNLOSS		ROG	1.693623267
2020	San Bernardino (SC)	T	PMBW		PM10	0.083952626
2020	San Bernardino (SC)	T	PMBW		PM2_5	0.035979697
2020	San Bernardino (SC)	T	PMTW		PM10	0.023283086
2020	San Bernardino (SC)	T	PMTW		PM2_5	0.005820772
2020	San Bernardino (SC)	T	RUNEX	5	CH4	0.17178046
2020	San Bernardino (SC)	T	RUNEX	10	CH4	0.133764569
2020	San Bernardino (SC)	T	RUNEX	15	CH4	0.089419915
2020	San Bernardino (SC)	T	RUNEX	20	CH4	0.061679077
2020	San Bernardino (SC)	T	RUNEX	25	CH4	0.04552998
2020	San Bernardino (SC)	T	RUNEX	30	CH4	0.034375062
2020	San Bernardino (SC)	T	RUNEX	35	CH4	0.026222023
2020	San Bernardino (SC)	T	RUNEX	40	CH4	0.020277764
2020	San Bernardino (SC)	T	RUNEX	45	CH4	0.015983974
2020	San Bernardino (SC)	T	RUNEX	50	CH4	0.012947802
2020	San Bernardino (SC)	T	RUNEX	55	CH4	0.010897475
2020	San Bernardino (SC)	T	RUNEX	60	CH4	0.010344121
2020	San Bernardino (SC)	T	RUNEX	65	CH4	0.010834289
2020	San Bernardino (SC)	T	RUNEX	5	CO	3.797904838
2020	San Bernardino (SC)	T	RUNEX	10	CO	3.050068406
2020	San Bernardino (SC)	T	RUNEX	15	CO	2.18107768
2020	San Bernardino (SC)	T	RUNEX	20	CO	1.616240846
2020	San Bernardino (SC)	T	RUNEX	25	CO	1.259083328
2020	San Bernardino (SC)	T	RUNEX	30	CO	1.008733314
2020	San Bernardino (SC)	T	RUNEX	35	CO	0.825426459
2020	San Bernardino (SC)	T	RUNEX	40	CO	0.692343382

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calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate
2020	San Bernardino (SC)	T	RUNEX	45	CO	0.597977733
2020	San Bernardino (SC)	T	RUNEX	50	CO	0.534777417
2020	San Bernardino (SC)	T	RUNEX	55	CO	0.498455221
2020	San Bernardino (SC)	T	RUNEX	60	CO	0.501444371
2020	San Bernardino (SC)	T	RUNEX	65	CO	0.539362448
2020	San Bernardino (SC)	T	RUNEX	5	CO2	2521.67471
2020	San Bernardino (SC)	T	RUNEX	10	CO2	2250.854099
2020	San Bernardino (SC)	T	RUNEX	15	CO2	1829.47566
2020	San Bernardino (SC)	T	RUNEX	20	CO2	1584.516525
2020	San Bernardino (SC)	T	RUNEX	25	CO2	1450.993545
2020	San Bernardino (SC)	T	RUNEX	30	CO2	1357.730133
2020	San Bernardino (SC)	T	RUNEX	35	CO2	1295.365396
2020	San Bernardino (SC)	T	RUNEX	40	CO2	1241.515088
2020	San Bernardino (SC)	T	RUNEX	45	CO2	1195.900289
2020	San Bernardino (SC)	T	RUNEX	50	CO2	1166.223804
2020	San Bernardino (SC)	T	RUNEX	55	CO2	1145.385384
2020	San Bernardino (SC)	T	RUNEX	60	CO2	1135.019232
2020	San Bernardino (SC)	T	RUNEX	65	CO2	1137.148436
2020	San Bernardino (SC)	T	RUNEX	5	NOx	11.82309722
2020	San Bernardino (SC)	T	RUNEX	10	NOx	9.596744627
2020	San Bernardino (SC)	T	RUNEX	15	NOx	6.740748221
2020	San Bernardino (SC)	T	RUNEX	20	NOx	4.885342784
2020	San Bernardino (SC)	T	RUNEX	25	NOx	3.811974922
2020	San Bernardino (SC)	T	RUNEX	30	NOx	3.249294126
2020	San Bernardino (SC)	T	RUNEX	35	NOx	2.898597833
2020	San Bernardino (SC)	T	RUNEX	40	NOx	2.663186935
2020	San Bernardino (SC)	T	RUNEX	45	NOx	2.498711823
2020	San Bernardino (SC)	T	RUNEX	50	NOx	2.382228019
2020	San Bernardino (SC)	T	RUNEX	55	NOx	2.300780674
2020	San Bernardino (SC)	T	RUNEX	60	NOx	2.27899414
2020	San Bernardino (SC)	T	RUNEX	65	NOx	2.296915729
2020	San Bernardino (SC)	T	RUNEX	5	PM10	0.047326858
2020	San Bernardino (SC)	T	RUNEX	10	PM10	0.040479786
2020	San Bernardino (SC)	T	RUNEX	15	PM10	0.033522445
2020	San Bernardino (SC)	T	RUNEX	20	PM10	0.028614622
2020	San Bernardino (SC)	T	RUNEX	25	PM10	0.025561493
2020	San Bernardino (SC)	T	RUNEX	30	PM10	0.023682471
2020	San Bernardino (SC)	T	RUNEX	35	PM10	0.022589612
2020	San Bernardino (SC)	T	RUNEX	40	PM10	0.022167277
2020	San Bernardino (SC)	T	RUNEX	45	PM10	0.022348727
2020	San Bernardino (SC)	T	RUNEX	50	PM10	0.023097738
2020	San Bernardino (SC)	T	RUNEX	55	PM10	0.024400148
2020	San Bernardino (SC)	T	RUNEX	60	PM10	0.025383889
2020	San Bernardino (SC)	T	RUNEX	65	PM10	0.025756072

EMFAC2014 Emissions Factors Data

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate
2020	San Bernardino (SC)	T	RUNEX	5	PM2_5	0.045237405
2020	San Bernardino (SC)	T	RUNEX	10	PM2_5	0.038701886
2020	San Bernardino (SC)	T	RUNEX	15	PM2_5	0.032054338
2020	San Bernardino (SC)	T	RUNEX	20	PM2_5	0.027364079
2020	San Bernardino (SC)	T	RUNEX	25	PM2_5	0.024446251
2020	San Bernardino (SC)	T	RUNEX	30	PM2_5	0.022650536
2020	San Bernardino (SC)	T	RUNEX	35	PM2_5	0.021606225
2020	San Bernardino (SC)	T	RUNEX	40	PM2_5	0.021202937
2020	San Bernardino (SC)	T	RUNEX	45	PM2_5	0.021376962
2020	San Bernardino (SC)	T	RUNEX	50	PM2_5	0.022093716
2020	San Bernardino (SC)	T	RUNEX	55	PM2_5	0.023339673
2020	San Bernardino (SC)	T	RUNEX	60	PM2_5	0.024280474
2020	San Bernardino (SC)	T	RUNEX	65	PM2_5	0.024635834
2020	San Bernardino (SC)	T	RUNEX	5	ROG	0.84061205
2020	San Bernardino (SC)	T	RUNEX	10	ROG	0.654641729
2020	San Bernardino (SC)	T	RUNEX	15	ROG	0.429311691
2020	San Bernardino (SC)	T	RUNEX	20	ROG	0.289846784
2020	San Bernardino (SC)	T	RUNEX	25	ROG	0.214219916
2020	San Bernardino (SC)	T	RUNEX	30	ROG	0.163009177
2020	San Bernardino (SC)	T	RUNEX	35	ROG	0.125539426
2020	San Bernardino (SC)	T	RUNEX	40	ROG	0.098165457
2020	San Bernardino (SC)	T	RUNEX	45	ROG	0.078346757
2020	San Bernardino (SC)	T	RUNEX	50	ROG	0.064308049
2020	San Bernardino (SC)	T	RUNEX	55	ROG	0.054831677
2020	San Bernardino (SC)	T	RUNEX	60	ROG	0.052443197
2020	San Bernardino (SC)	T	RUNEX	65	ROG	0.055102607
2020	San Bernardino (SC)	T	RUNEX	5	SOx	0.023813776
2020	San Bernardino (SC)	T	RUNEX	10	SOx	0.021262606
2020	San Bernardino (SC)	T	RUNEX	15	SOx	0.017261822
2020	San Bernardino (SC)	T	RUNEX	20	SOx	0.014945968
2020	San Bernardino (SC)	T	RUNEX	25	SOx	0.013684646
2020	San Bernardino (SC)	T	RUNEX	30	SOx	0.012801631
2020	San Bernardino (SC)	T	RUNEX	35	SOx	0.012214888
2020	San Bernardino (SC)	T	RUNEX	40	SOx	0.011707624
2020	San Bernardino (SC)	T	RUNEX	45	SOx	0.011277807
2020	San Bernardino (SC)	T	RUNEX	50	SOx	0.011001446
2020	San Bernardino (SC)	T	RUNEX	55	SOx	0.01080912
2020	San Bernardino (SC)	T	RUNEX	60	SOx	0.010713051
2020	San Bernardino (SC)	T	RUNEX	65	SOx	0.010734304
2020	San Bernardino (SC)	T	RUNLOSS		ROG	5.409431832
2040	San Bernardino (SC)	NT	PMBW		PM10	0.037939055
2040	San Bernardino (SC)	NT	PMBW		PM2_5	0.016259595
2040	San Bernardino (SC)	NT	PMTW		PM10	0.007999748
2040	San Bernardino (SC)	NT	PMTW		PM2_5	0.001999937

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calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate
2040	San Bernardino (SC)	NT	RUNEX	5	CH4	0.027105577
2040	San Bernardino (SC)	NT	RUNEX	10	CH4	0.017903898
2040	San Bernardino (SC)	NT	RUNEX	15	CH4	0.011309775
2040	San Bernardino (SC)	NT	RUNEX	20	CH4	0.007405857
2040	San Bernardino (SC)	NT	RUNEX	25	CH4	0.005442135
2040	San Bernardino (SC)	NT	RUNEX	30	CH4	0.004282864
2040	San Bernardino (SC)	NT	RUNEX	35	CH4	0.003549452
2040	San Bernardino (SC)	NT	RUNEX	40	CH4	0.003095352
2040	San Bernardino (SC)	NT	RUNEX	45	CH4	0.002840222
2040	San Bernardino (SC)	NT	RUNEX	50	CH4	0.00274293
2040	San Bernardino (SC)	NT	RUNEX	55	CH4	0.002789056
2040	San Bernardino (SC)	NT	RUNEX	60	CH4	0.002993364
2040	San Bernardino (SC)	NT	RUNEX	65	CH4	0.003386747
2040	San Bernardino (SC)	NT	RUNEX	5	CO	0.759321423
2040	San Bernardino (SC)	NT	RUNEX	10	CO	0.660683679
2040	San Bernardino (SC)	NT	RUNEX	15	CO	0.573417279
2040	San Bernardino (SC)	NT	RUNEX	20	CO	0.507233382
2040	San Bernardino (SC)	NT	RUNEX	25	CO	0.459032734
2040	San Bernardino (SC)	NT	RUNEX	30	CO	0.419886071
2040	San Bernardino (SC)	NT	RUNEX	35	CO	0.386938668
2040	San Bernardino (SC)	NT	RUNEX	40	CO	0.359122761
2040	San Bernardino (SC)	NT	RUNEX	45	CO	0.335815701
2040	San Bernardino (SC)	NT	RUNEX	50	CO	0.316736342
2040	San Bernardino (SC)	NT	RUNEX	55	CO	0.301943036
2040	San Bernardino (SC)	NT	RUNEX	60	CO	0.292007584
2040	San Bernardino (SC)	NT	RUNEX	65	CO	0.288031999
2040	San Bernardino (SC)	NT	RUNEX	5	CO2	584.2797749
2040	San Bernardino (SC)	NT	RUNEX	10	CO2	435.4952422
2040	San Bernardino (SC)	NT	RUNEX	15	CO2	335.3718119
2040	San Bernardino (SC)	NT	RUNEX	20	CO2	267.8784798
2040	San Bernardino (SC)	NT	RUNEX	25	CO2	222.5804556
2040	San Bernardino (SC)	NT	RUNEX	30	CO2	191.9783029
2040	San Bernardino (SC)	NT	RUNEX	35	CO2	171.7608974
2040	San Bernardino (SC)	NT	RUNEX	40	CO2	159.3662482
2040	San Bernardino (SC)	NT	RUNEX	45	CO2	153.313877
2040	San Bernardino (SC)	NT	RUNEX	50	CO2	152.9640913
2040	San Bernardino (SC)	NT	RUNEX	55	CO2	158.3588135
2040	San Bernardino (SC)	NT	RUNEX	60	CO2	170.1020304
2040	San Bernardino (SC)	NT	RUNEX	65	CO2	189.5643539
2040	San Bernardino (SC)	NT	RUNEX	5	NOx	0.058758736
2040	San Bernardino (SC)	NT	RUNEX	10	NOx	0.049456942
2040	San Bernardino (SC)	NT	RUNEX	15	NOx	0.040149014
2040	San Bernardino (SC)	NT	RUNEX	20	NOx	0.033586364
2040	San Bernardino (SC)	NT	RUNEX	25	NOx	0.02929716

EMFAC2014 Emissions Factors Data

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate
2040	San Bernardino (SC)	NT	RUNEX	30	NOx	0.026626266
2040	San Bernardino (SC)	NT	RUNEX	35	NOx	0.024833146
2040	San Bernardino (SC)	NT	RUNEX	40	NOx	0.023645513
2040	San Bernardino (SC)	NT	RUNEX	45	NOx	0.022930146
2040	San Bernardino (SC)	NT	RUNEX	50	NOx	0.022617605
2040	San Bernardino (SC)	NT	RUNEX	55	NOx	0.022675271
2040	San Bernardino (SC)	NT	RUNEX	60	NOx	0.02312849
2040	San Bernardino (SC)	NT	RUNEX	65	NOx	0.023981927
2040	San Bernardino (SC)	NT	RUNEX	5	PM10	0.004893279
2040	San Bernardino (SC)	NT	RUNEX	10	PM10	0.00309451
2040	San Bernardino (SC)	NT	RUNEX	15	PM10	0.002061701
2040	San Bernardino (SC)	NT	RUNEX	20	PM10	0.001448443
2040	San Bernardino (SC)	NT	RUNEX	25	PM10	0.001073959
2040	San Bernardino (SC)	NT	RUNEX	30	PM10	0.000840086
2040	San Bernardino (SC)	NT	RUNEX	35	PM10	0.000692839
2040	San Bernardino (SC)	NT	RUNEX	40	PM10	0.000602266
2040	San Bernardino (SC)	NT	RUNEX	45	PM10	0.000551711
2040	San Bernardino (SC)	NT	RUNEX	50	PM10	0.000532558
2040	San Bernardino (SC)	NT	RUNEX	55	PM10	0.000541703
2040	San Bernardino (SC)	NT	RUNEX	60	PM10	0.000581038
2040	San Bernardino (SC)	NT	RUNEX	65	PM10	0.000657107
2040	San Bernardino (SC)	NT	RUNEX	5	PM2_5	0.004501957
2040	San Bernardino (SC)	NT	RUNEX	10	PM2_5	0.002847585
2040	San Bernardino (SC)	NT	RUNEX	15	PM2_5	0.001897449
2040	San Bernardino (SC)	NT	RUNEX	20	PM2_5	0.001333207
2040	San Bernardino (SC)	NT	RUNEX	25	PM2_5	0.00098865
2040	San Bernardino (SC)	NT	RUNEX	30	PM2_5	0.000773461
2040	San Bernardino (SC)	NT	RUNEX	35	PM2_5	0.000637965
2040	San Bernardino (SC)	NT	RUNEX	40	PM2_5	0.00055461
2040	San Bernardino (SC)	NT	RUNEX	45	PM2_5	0.000508076
2040	San Bernardino (SC)	NT	RUNEX	50	PM2_5	0.000490436
2040	San Bernardino (SC)	NT	RUNEX	55	PM2_5	0.000498834
2040	San Bernardino (SC)	NT	RUNEX	60	PM2_5	0.000535023
2040	San Bernardino (SC)	NT	RUNEX	65	PM2_5	0.000605018
2040	San Bernardino (SC)	NT	RUNEX	5	ROG	0.078163326
2040	San Bernardino (SC)	NT	RUNEX	10	ROG	0.050292423
2040	San Bernardino (SC)	NT	RUNEX	15	ROG	0.033814234
2040	San Bernardino (SC)	NT	RUNEX	20	ROG	0.023947601
2040	San Bernardino (SC)	NT	RUNEX	25	ROG	0.017965306
2040	San Bernardino (SC)	NT	RUNEX	30	ROG	0.014217355
2040	San Bernardino (SC)	NT	RUNEX	35	ROG	0.011851304
2040	San Bernardino (SC)	NT	RUNEX	40	ROG	0.010403786
2040	San Bernardino (SC)	NT	RUNEX	45	ROG	0.009617155
2040	San Bernardino (SC)	NT	RUNEX	50	ROG	0.009360579

EMFAC2014 Emissions Factors Data

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate
2040	San Bernardino (SC)	NT	RUNEX	55	ROG	0.009592555
2040	San Bernardino (SC)	NT	RUNEX	60	ROG	0.010353219
2040	San Bernardino (SC)	NT	RUNEX	65	ROG	0.011764904
2040	San Bernardino (SC)	NT	RUNEX	5	SOx	0.005824467
2040	San Bernardino (SC)	NT	RUNEX	10	SOx	0.0043394
2040	San Bernardino (SC)	NT	RUNEX	15	SOx	0.003341782
2040	San Bernardino (SC)	NT	RUNEX	20	SOx	0.002669651
2040	San Bernardino (SC)	NT	RUNEX	25	SOx	0.002218012
2040	San Bernardino (SC)	NT	RUNEX	30	SOx	0.001912654
2040	San Bernardino (SC)	NT	RUNEX	35	SOx	0.001710899
2040	San Bernardino (SC)	NT	RUNEX	40	SOx	0.001587181
2040	San Bernardino (SC)	NT	RUNEX	45	SOx	0.001526718
2040	San Bernardino (SC)	NT	RUNEX	50	SOx	0.001523114
2040	San Bernardino (SC)	NT	RUNEX	55	SOx	0.001576782
2040	San Bernardino (SC)	NT	RUNEX	60	SOx	0.001693759
2040	San Bernardino (SC)	NT	RUNEX	65	SOx	0.001887735
2040	San Bernardino (SC)	NT	RUNLOSS		ROG	0.726824725
2040	San Bernardino (SC)	T	PMBW		PM10	0.083655032
2040	San Bernardino (SC)	T	PMBW		PM2_5	0.035852156
2040	San Bernardino (SC)	T	PMTW		PM10	0.025642322
2040	San Bernardino (SC)	T	PMTW		PM2_5	0.006410581
2040	San Bernardino (SC)	T	RUNEX	5	CH4	0.154077075
2040	San Bernardino (SC)	T	RUNEX	10	CH4	0.123909324
2040	San Bernardino (SC)	T	RUNEX	15	CH4	0.086296951
2040	San Bernardino (SC)	T	RUNEX	20	CH4	0.061761533
2040	San Bernardino (SC)	T	RUNEX	25	CH4	0.045222042
2040	San Bernardino (SC)	T	RUNEX	30	CH4	0.03339982
2040	San Bernardino (SC)	T	RUNEX	35	CH4	0.024705288
2040	San Bernardino (SC)	T	RUNEX	40	CH4	0.018309123
2040	San Bernardino (SC)	T	RUNEX	45	CH4	0.013606272
2040	San Bernardino (SC)	T	RUNEX	50	CH4	0.010154181
2040	San Bernardino (SC)	T	RUNEX	55	CH4	0.007629193
2040	San Bernardino (SC)	T	RUNEX	60	CH4	0.006653042
2040	San Bernardino (SC)	T	RUNEX	65	CH4	0.006701254
2040	San Bernardino (SC)	T	RUNEX	5	CO	3.121157248
2040	San Bernardino (SC)	T	RUNEX	10	CO	2.521798601
2040	San Bernardino (SC)	T	RUNEX	15	CO	1.752680003
2040	San Bernardino (SC)	T	RUNEX	20	CO	1.252617131
2040	San Bernardino (SC)	T	RUNEX	25	CO	0.932470746
2040	San Bernardino (SC)	T	RUNEX	30	CO	0.706337713
2040	San Bernardino (SC)	T	RUNEX	35	CO	0.539248328
2040	San Bernardino (SC)	T	RUNEX	40	CO	0.415351589
2040	San Bernardino (SC)	T	RUNEX	45	CO	0.323245057
2040	San Bernardino (SC)	T	RUNEX	50	CO	0.254639982

EMFAC2014 Emissions Factors Data

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate
2040	San Bernardino (SC)	T	RUNEX	55	CO	0.203492081
2040	San Bernardino (SC)	T	RUNEX	60	CO	0.18147271
2040	San Bernardino (SC)	T	RUNEX	65	CO	0.178970702
2040	San Bernardino (SC)	T	RUNEX	5	CO2	2421.912394
2040	San Bernardino (SC)	T	RUNEX	10	CO2	2148.917028
2040	San Bernardino (SC)	T	RUNEX	15	CO2	1768.451259
2040	San Bernardino (SC)	T	RUNEX	20	CO2	1536.126085
2040	San Bernardino (SC)	T	RUNEX	25	CO2	1413.724588
2040	San Bernardino (SC)	T	RUNEX	30	CO2	1333.838452
2040	San Bernardino (SC)	T	RUNEX	35	CO2	1276.031943
2040	San Bernardino (SC)	T	RUNEX	40	CO2	1225.055267
2040	San Bernardino (SC)	T	RUNEX	45	CO2	1183.916517
2040	San Bernardino (SC)	T	RUNEX	50	CO2	1151.396138
2040	San Bernardino (SC)	T	RUNEX	55	CO2	1123.323045
2040	San Bernardino (SC)	T	RUNEX	60	CO2	1108.261099
2040	San Bernardino (SC)	T	RUNEX	65	CO2	1109.366908
2040	San Bernardino (SC)	T	RUNEX	5	NOx	13.13950025
2040	San Bernardino (SC)	T	RUNEX	10	NOx	9.971456771
2040	San Bernardino (SC)	T	RUNEX	15	NOx	5.978947723
2040	San Bernardino (SC)	T	RUNEX	20	NOx	3.349784324
2040	San Bernardino (SC)	T	RUNEX	25	NOx	1.817488696
2040	San Bernardino (SC)	T	RUNEX	30	NOx	1.13294662
2040	San Bernardino (SC)	T	RUNEX	35	NOx	0.76999016
2040	San Bernardino (SC)	T	RUNEX	40	NOx	0.557306022
2040	San Bernardino (SC)	T	RUNEX	45	NOx	0.423394962
2040	San Bernardino (SC)	T	RUNEX	50	NOx	0.334440011
2040	San Bernardino (SC)	T	RUNEX	55	NOx	0.2728886
2040	San Bernardino (SC)	T	RUNEX	60	NOx	0.249623177
2040	San Bernardino (SC)	T	RUNEX	65	NOx	0.250711549
2040	San Bernardino (SC)	T	RUNEX	5	PM10	0.01006747
2040	San Bernardino (SC)	T	RUNEX	10	PM10	0.008863552
2040	San Bernardino (SC)	T	RUNEX	15	PM10	0.007511135
2040	San Bernardino (SC)	T	RUNEX	20	PM10	0.006575946
2040	San Bernardino (SC)	T	RUNEX	25	PM10	0.00588477
2040	San Bernardino (SC)	T	RUNEX	30	PM10	0.005361844
2040	San Bernardino (SC)	T	RUNEX	35	PM10	0.004944971
2040	San Bernardino (SC)	T	RUNEX	40	PM10	0.004602055
2040	San Bernardino (SC)	T	RUNEX	45	PM10	0.004313975
2040	San Bernardino (SC)	T	RUNEX	50	PM10	0.004068842
2040	San Bernardino (SC)	T	RUNEX	55	PM10	0.003859259
2040	San Bernardino (SC)	T	RUNEX	60	PM10	0.003774496
2040	San Bernardino (SC)	T	RUNEX	65	PM10	0.003799091
2040	San Bernardino (SC)	T	RUNEX	5	PM2_5	0.0096132
2040	San Bernardino (SC)	T	RUNEX	10	PM2_5	0.008468317

EMFAC2014 Emissions Factors Data

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate
2040	San Bernardino (SC)	T	RUNEX	15	PM2_5	0.007178373
2040	San Bernardino (SC)	T	RUNEX	20	PM2_5	0.006285989
2040	San Bernardino (SC)	T	RUNEX	25	PM2_5	0.005626145
2040	San Bernardino (SC)	T	RUNEX	30	PM2_5	0.005126735
2040	San Bernardino (SC)	T	RUNEX	35	PM2_5	0.004728457
2040	San Bernardino (SC)	T	RUNEX	40	PM2_5	0.00440072
2040	San Bernardino (SC)	T	RUNEX	45	PM2_5	0.004125294
2040	San Bernardino (SC)	T	RUNEX	50	PM2_5	0.003890836
2040	San Bernardino (SC)	T	RUNEX	55	PM2_5	0.003690283
2040	San Bernardino (SC)	T	RUNEX	60	PM2_5	0.003609036
2040	San Bernardino (SC)	T	RUNEX	65	PM2_5	0.003632278
2040	San Bernardino (SC)	T	RUNEX	5	ROG	0.459081455
2040	San Bernardino (SC)	T	RUNEX	10	ROG	0.365991443
2040	San Bernardino (SC)	T	RUNEX	15	ROG	0.24639673
2040	San Bernardino (SC)	T	RUNEX	20	ROG	0.169749034
2040	San Bernardino (SC)	T	RUNEX	25	ROG	0.123182591
2040	San Bernardino (SC)	T	RUNEX	30	ROG	0.091034491
2040	San Bernardino (SC)	T	RUNEX	35	ROG	0.067540676
2040	San Bernardino (SC)	T	RUNEX	40	ROG	0.050314641
2040	San Bernardino (SC)	T	RUNEX	45	ROG	0.037668074
2040	San Bernardino (SC)	T	RUNEX	50	ROG	0.028387158
2040	San Bernardino (SC)	T	RUNEX	55	ROG	0.021594095
2040	San Bernardino (SC)	T	RUNEX	60	ROG	0.018986878
2040	San Bernardino (SC)	T	RUNEX	65	ROG	0.019177727
2040	San Bernardino (SC)	T	RUNEX	5	SOx	0.022680062
2040	San Bernardino (SC)	T	RUNEX	10	SOx	0.020125752
2040	San Bernardino (SC)	T	RUNEX	15	SOx	0.016548822
2040	San Bernardino (SC)	T	RUNEX	20	SOx	0.014370324
2040	San Bernardino (SC)	T	RUNEX	25	SOx	0.013223881
2040	San Bernardino (SC)	T	RUNEX	30	SOx	0.012474881
2040	San Bernardino (SC)	T	RUNEX	35	SOx	0.011934844
2040	San Bernardino (SC)	T	RUNEX	40	SOx	0.011457763
2040	San Bernardino (SC)	T	RUNEX	45	SOx	0.011073006
2040	San Bernardino (SC)	T	RUNEX	50	SOx	0.010770214
2040	San Bernardino (SC)	T	RUNEX	55	SOx	0.010509236
2040	San Bernardino (SC)	T	RUNEX	60	SOx	0.010368614
2040	San Bernardino (SC)	T	RUNEX	65	SOx	0.010379419
2040	San Bernardino (SC)	T	RUNLOSS		ROG	1.441889915

Bus VMT Emissions Worksheet

	Annual Bus VMT		
	2016	2020	2040
Existing	9,207,000		
No Build		9,207,000	9,207,000
Alt A - With Haven		9,211,620	9,211,620
Alt B - With Haven		9,211,620	9,211,620

O&M Facility

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EF (g/mi)

Year

2016	1.268	20.488	10.265	0.871	0.380	8.028	2142.240
2020	0.817	16.773	6.639	0.865	0.375	5.901	2082.439
2023	0.560	14.642	4.635	0.862	0.371	4.681	2045.287
2040	0.101	10.837	1.105	0.856	0.366	2.502	1963.559

lb/day

	ROG	CO	NOX	PM10	PM2_5	CH4	CO2	
Existing	2016	70.5	1139.4	570.8	48.4	21.2	446.4	119131.9
NB	2020	45.5	932.7	369.2	48.1	20.8	328.1	115806.3
B	2020	45.7	938.5	371.5	48.4	21.0	330.2	116525.5
NB	2040	5.6	602.7	61.4	47.6	20.3	139.1	109195.3
B	2040	5.7	606.4	61.8	47.9	20.5	140.0	109873.4

EMFAC2014 sbX CNG Bus Emission Rate Calculations

Emission Rate Summary

Year	ROG	CO	NOX	PM10	PM2_5	CH4	CO2
2016	1.268	20.488	10.265	0.871	0.380	8.028	2142.240
2020	0.817	16.773	6.639	0.865	0.375	5.901	2082.439
2023	0.560	14.642	4.635	0.862	0.371	4.681	2045.287
2040	0.101	10.837	1.105	0.856	0.366	2.502	1963.559

calendar_year	season_month	sub_area	vehicle_class	fuel	process	speed_time	pollutant	emission_rate	Emission Rate (g/mi)
2016	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15	CH4	11.11120467	
2016	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20	CH4	4.944541376	8.027873021
2016	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15	CO	25.54115527	
2016	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20	CO	15.43556016	20.48835771
2016	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15	CO2	2353.309279	
2016	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20	CO2	1931.170141	2142.23971
2016	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15	NOx	11.6502687	
2016	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20	NOx	8.879228866	10.26474878
2016	Annual	San Bernardino (SC)	UBUS	NG	PMBW		PM10	0.84182	
2016	Annual	San Bernardino (SC)	UBUS	NG	PMTW		PM10	0.012	
2016	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15	PM10	0.021174574	
2016	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20	PM10	0.013510041	0.871162307
2016	Annual	San Bernardino (SC)	UBUS	NG	PMBW		PM2_5	0.36078	
2016	Annual	San Bernardino (SC)	UBUS	NG	PMTW		PM2_5	0.003	
2016	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15	PM2_5	0.020258571	
2016	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20	PM2_5	0.012925602	0.380372087
2016	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15	ROG	1.745832511	
2016	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20	ROG	0.789624344	1.267728428
2020	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15	CH4	8.208466248	
2020	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20	CH4	3.592986732	5.90072649
2020	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15	CO	21.65787791	
2020	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20	CO	11.88729864	16.77258828
2020	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15	CO2	2287.616408	
2020	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20	CO2	1877.261328	2082.438868
2020	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15	NOx	7.548229581	
2020	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20	NOx	5.728927745	6.638578663
2020	Annual	San Bernardino (SC)	UBUS	NG	PMBW		PM10	0.84182	
2020	Annual	San Bernardino (SC)	UBUS	NG	PMTW		PM10	0.012	
2020	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15	PM10	0.013691817	
2020	Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20	PM10	0.008891354	0.865111585
2020	Annual	San Bernardino (SC)	UBUS	NG	PMBW		PM2_5	0.36078	
2020	Annual	San Bernardino (SC)	UBUS	NG	PMTW		PM2_5	0.003	

EMFAC2014 sbX CNG Bus Emission Rate Calculations

2020 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15 PM2_5	0.013099515	
2020 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20 PM2_5	0.008506718	0.374583116
2020 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15 ROG	1.125838534	
2020 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20 ROG	0.509000094	0.817419314
2023 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15 CH4	6.545912661	
2023 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20 CH4	2.815857525	4.680885093
2023 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15 CO	19.41055791	
2023 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20 CO	9.874181331	14.64236962
2023 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15 CO2	2246.804415	
2023 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20 CO2	1843.770233	2045.287324
2023 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15 NOx	5.282506207	
2023 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20 NOx	3.987179542	4.634842875
2023 Annual	San Bernardino (SC)	UBUS	NG	PMBW	PM10	0.84182	
2023 Annual	San Bernardino (SC)	UBUS	NG	PMTW	PM10	0.012	
2023 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15 PM10	0.009601692	
2023 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20 PM10	0.006330634	0.861786163
2023 Annual	San Bernardino (SC)	UBUS	NG	PMBW	PM2_5	0.36078	
2023 Annual	San Bernardino (SC)	UBUS	NG	PMTW	PM2_5	0.003	
2023 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15 PM2_5	0.009186327	
2023 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20 PM2_5	0.006056773	0.37140155
2023 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15 ROG	0.772022525	
2023 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20 ROG	0.348235927	0.560129226
2040 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15 CH4	3.577293728	
2040 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20 CH4	1.426240986	2.501767357
2040 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15 CO	15.38271819	
2040 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20 CO	6.292047206	10.8373827
2040 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15 CO2	2157.023163	
2040 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20 CO2	1770.094038	1963.5586
2040 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15 NOx	1.291492772	
2040 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20 NOx	0.917948267	1.104720519
2040 Annual	San Bernardino (SC)	UBUS	NG	PMBW	PM10	0.84182	
2040 Annual	San Bernardino (SC)	UBUS	NG	PMTW	PM10	0.012	
2040 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15 PM10	0.002426152	
2040 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20 PM10	0.001813389	0.855939771
2040 Annual	San Bernardino (SC)	UBUS	NG	PMBW	PM2_5	0.36078	
2040 Annual	San Bernardino (SC)	UBUS	NG	PMTW	PM2_5	0.003	
2040 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15 PM2_5	0.002321198	
2040 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20 PM2_5	0.001734943	0.36580807
2040 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	15 ROG	0.141095604	
2040 Annual	San Bernardino (SC)	UBUS	NG	RUNEX	20 ROG	0.061151704	0.101123654

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

West Valley Connector O&M Facility
San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	12.84	1000sqft	0.00	12,836.00	0
Parking Lot	155.00	Space	0.00	93,821.00	0
Automobile Care Center	33.89	1000sqft	5.16	33,889.00	0
Gasoline/Service Station	5.00	Pump	0.00	18,707.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	10			Operational Year	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

Project Characteristics -

Land Use - Total building area = 65,432 square feet. Total required lot acreage = 5.16 acres. (O&M Facility Needs Assessment Report)

Construction Phase - Construction duration is approximately 12 months.

Trips and VMT - Even number trips reflect round trips.

Demolition - Conservatively assume maximum possible demolition.

Grading - Excavation will generate maximum of 800 CY material export. (DSA+ISA Quantities Sheet).

Vehicle Trips - All operational trips are associated with employees.

Construction Off-road Equipment Mitigation - Compliance with SCAQMD Rule 403.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	230.00	210.00
tblGrading	MaterialExported	0.00	800.00
tblLandUse	LandUseSquareFeet	12,840.00	12,836.00
tblLandUse	LandUseSquareFeet	62,000.00	93,821.00
tblLandUse	LandUseSquareFeet	33,890.00	33,889.00
tblLandUse	LandUseSquareFeet	705.87	18,707.00
tblLandUse	LotAcreage	0.29	0.00
tblLandUse	LotAcreage	1.39	0.00
tblLandUse	LotAcreage	0.78	5.16
tblLandUse	LotAcreage	0.02	0.00
tblTripsAndVMT	HaulingTripNumber	971.00	972.00
tblTripsAndVMT	WorkerTripNumber	15.00	16.00
tblTripsAndVMT	WorkerTripNumber	15.00	16.00
tblTripsAndVMT	WorkerTripNumber	15.00	16.00
tblVehicleTrips	CC_TTP	48.00	0.00

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

tblVehicleTrips	CC_TTP	79.00	0.00
tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TTP	33.00	100.00
tblVehicleTrips	CW_TTP	2.00	100.00
tblVehicleTrips	CW_TTP	33.00	100.00
tblVehicleTrips	DV_TP	51.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	19.00	0.00
tblVehicleTrips	PB_TP	28.00	0.00
tblVehicleTrips	PB_TP	59.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PR_TP	21.00	100.00
tblVehicleTrips	PR_TP	14.00	100.00
tblVehicleTrips	PR_TP	77.00	100.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	168.56	0.00
tblVehicleTrips	ST_TR	2.46	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	168.56	0.00
tblVehicleTrips	SU_TR	1.05	0.00
tblVehicleTrips	WD_TR	23.72	5.91
tblVehicleTrips	WD_TR	168.56	0.00
tblVehicleTrips	WD_TR	11.03	0.00

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

2.0 Emissions Summary**2.1 Overall Construction (Maximum Daily Emission)****Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	35.1320	32.5566	36.0103	0.0677	7.7479	1.4685	9.0092	3.4396	1.3745	4.3088	0.0000	6,581.316 7	6,581.316 7	1.4160	0.0000	6,616.715 7
Maximum	35.1320	32.5566	36.0103	0.0677	7.7479	1.4685	9.0092	3.4396	1.3745	4.3088	0.0000	6,581.316 7	6,581.316 7	1.4160	0.0000	6,616.715 7

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	35.1320	32.5566	36.0103	0.0677	3.4766	1.4685	4.7380	1.3850	1.3745	2.2542	0.0000	6,581.316 7	6,581.316 7	1.4160	0.0000	6,616.715 7
Maximum	35.1320	32.5566	36.0103	0.0677	3.4766	1.4685	4.7380	1.3850	1.3745	2.2542	0.0000	6,581.316 7	6,581.316 7	1.4160	0.0000	6,616.715 7

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	55.13	0.00	47.41	59.73	0.00	47.68	0.00	0.00	0.00	0.00	0.00	0.00

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

2.2 Overall Operational**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.5041	1.9000e-004	0.0211	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0452	0.0452	1.2000e-004		0.0482
Energy	0.0518	0.4710	0.3956	2.8300e-003		0.0358	0.0358		0.0358	0.0358		565.1523	565.1523	0.0108	0.0104	568.5107
Mobile	0.4297	2.7769	6.4855	0.0297	2.5803	0.0184	2.5987	0.6904	0.0171	0.7076		3,029.1731	3,029.1731	0.1256		3,032.3139
Total	1.9856	3.2480	6.9023	0.0325	2.5803	0.0542	2.6346	0.6904	0.0530	0.7434		3,594.3707	3,594.3707	0.1366	0.0104	3,600.8728

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.5041	1.9000e-004	0.0211	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0452	0.0452	1.2000e-004		0.0482
Energy	0.0518	0.4710	0.3956	2.8300e-003		0.0358	0.0358		0.0358	0.0358		565.1523	565.1523	0.0108	0.0104	568.5107
Mobile	0.4297	2.7769	6.4855	0.0297	2.5803	0.0184	2.5987	0.6904	0.0171	0.7076		3,029.1731	3,029.1731	0.1256		3,032.3139
Total	1.9856	3.2480	6.9023	0.0325	2.5803	0.0542	2.6346	0.6904	0.0530	0.7434		3,594.3707	3,594.3707	0.1366	0.0104	3,600.8728

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/3/2022	2/11/2022	5	30	
2	Grading	Grading	2/12/2022	3/11/2022	5	20	
3	Building Construction	Building Construction	3/12/2022	12/30/2022	5	210	
4	Paving	Paving	12/5/2022	12/30/2022	5	20	
5	Architectural Coating	Architectural Coating	12/5/2022	12/30/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 98,148; Non-Residential Outdoor: 32,716; Striped Parking Area: 5,629 (Architectural Coating – sqft)

OffRoad Equipment

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	16.00	0.00	972.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	16.00	0.00	100.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	60.00	26.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	16.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	12.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0020	0.0000	7.0020	1.0602	0.0000	1.0602			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.781 2	3,746.781 2	1.0524		3,773.092 0
Total	2.6392	25.7194	20.5941	0.0388	7.0020	1.2427	8.2447	1.0602	1.1553	2.2154		3,746.781 2	3,746.781 2	1.0524		3,773.092 0

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

3.2 Demolition - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1903	6.7897	1.2650	0.0242	0.5670	0.0176	0.5846	0.1555	0.0168	0.1723		2,573.877 0	2,573.877 0	0.1520		2,577.676 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0763	0.0475	0.4983	1.5200e-003	0.1788	1.1100e-003	0.1800	0.0474	1.0200e-003	0.0485		151.3834	151.3834	3.9200e-003		151.4814
Total	0.2666	6.8372	1.7632	0.0257	0.7458	0.0187	0.7645	0.2029	0.0178	0.2207		2,725.260 4	2,725.260 4	0.1559		2,729.158 2

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7308	0.0000	2.7308	0.4135	0.0000	0.4135			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.781 2	3,746.781 2	1.0524		3,773.092 0
Total	2.6392	25.7194	20.5941	0.0388	2.7308	1.2427	3.9734	0.4135	1.1553	1.5687	0.0000	3,746.781 2	3,746.781 2	1.0524		3,773.092 0

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

3.2 Demolition - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1903	6.7897	1.2650	0.0242	0.5670	0.0176	0.5846	0.1555	0.0168	0.1723		2,573.877 0	2,573.877 0	0.1520		2,577.676 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0763	0.0475	0.4983	1.5200e-003	0.1788	1.1100e-003	0.1800	0.0474	1.0200e-003	0.0485		151.3834	151.3834	3.9200e-003		151.4814
Total	0.2666	6.8372	1.7632	0.0257	0.7458	0.0187	0.7645	0.2029	0.0178	0.2207		2,725.260 4	2,725.260 4	0.1559		2,729.158 2

3.3 Grading - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5569	0.0000	6.5569	3.3682	0.0000	3.3682			0.0000			0.0000
Off-Road	1.9486	20.8551	15.2727	0.0297		0.9409	0.9409		0.8656	0.8656		2,872.046 4	2,872.046 4	0.9289		2,895.268 4
Total	1.9486	20.8551	15.2727	0.0297	6.5569	0.9409	7.4977	3.3682	0.8656	4.2338		2,872.046 4	2,872.046 4	0.9289		2,895.268 4

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

3.3 Grading - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0294	1.0478	0.1952	3.7400e-003	0.0875	2.7100e-003	0.0902	0.0240	2.6000e-003	0.0266		397.2032	397.2032	0.0235		397.7896
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0763	0.0475	0.4983	1.5200e-003	0.1788	1.1100e-003	0.1800	0.0474	1.0200e-003	0.0485		151.3834	151.3834	3.9200e-003		151.4814
Total	0.1057	1.0953	0.6935	5.2600e-003	0.2663	3.8200e-003	0.2702	0.0714	3.6200e-003	0.0750		548.5866	548.5866	0.0274		549.2711

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5572	0.0000	2.5572	1.3136	0.0000	1.3136			0.0000			0.0000
Off-Road	1.9486	20.8551	15.2727	0.0297		0.9409	0.9409		0.8656	0.8656	0.0000	2,872.0464	2,872.0464	0.9289		2,895.2684
Total	1.9486	20.8551	15.2727	0.0297	2.5572	0.9409	3.4980	1.3136	0.8656	2.1792	0.0000	2,872.0464	2,872.0464	0.9289		2,895.2684

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

3.3 Grading - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0294	1.0478	0.1952	3.7400e-003	0.0875	2.7100e-003	0.0902	0.0240	2.6000e-003	0.0266		397.2032	397.2032	0.0235		397.7896
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0763	0.0475	0.4983	1.5200e-003	0.1788	1.1100e-003	0.1800	0.0474	1.0200e-003	0.0485		151.3834	151.3834	3.9200e-003		151.4814
Total	0.1057	1.0953	0.6935	5.2600e-003	0.2663	3.8200e-003	0.2702	0.0714	3.6200e-003	0.0750		548.5866	548.5866	0.0274		549.2711

3.4 Building Construction - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

3.4 Building Construction - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0666	2.3501	0.5123	6.6800e-003	0.1665	3.7200e-003	0.1702	0.0480	3.5600e-003	0.0515		705.2663	705.2663	0.0501		706.5190
Worker	0.2861	0.1781	1.8685	5.7000e-003	0.6707	4.1600e-003	0.6748	0.1779	3.8300e-003	0.1817		567.6876	567.6876	0.0147		568.0554
Total	0.3526	2.5282	2.3809	0.0124	0.8372	7.8800e-003	0.8451	0.2258	7.3900e-003	0.2332		1,272.9539	1,272.9539	0.0648		1,274.5744

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

3.4 Building Construction - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0666	2.3501	0.5123	6.6800e-003	0.1665	3.7200e-003	0.1702	0.0480	3.5600e-003	0.0515		705.2663	705.2663	0.0501		706.5190
Worker	0.2861	0.1781	1.8685	5.7000e-003	0.6707	4.1600e-003	0.6748	0.1779	3.8300e-003	0.1817		567.6876	567.6876	0.0147		568.0554
Total	0.3526	2.5282	2.3809	0.0124	0.8372	7.8800e-003	0.8451	0.2258	7.3900e-003	0.2332		1,272.9539	1,272.9539	0.0648		1,274.5744

3.5 Paving - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

3.5 Paving - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0763	0.0475	0.4983	1.5200e-003	0.1788	1.1100e-003	0.1800	0.0474	1.0200e-003	0.0485		151.3834	151.3834	3.9200e-003		151.4814
Total	0.0763	0.0475	0.4983	1.5200e-003	0.1788	1.1100e-003	0.1800	0.0474	1.0200e-003	0.0485		151.3834	151.3834	3.9200e-003		151.4814

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

3.5 Paving - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0763	0.0475	0.4983	1.5200e-003	0.1788	1.1100e-003	0.1800	0.0474	1.0200e-003	0.0485		151.3834	151.3834	3.9200e-003		151.4814
Total	0.0763	0.0475	0.4983	1.5200e-003	0.1788	1.1100e-003	0.1800	0.0474	1.0200e-003	0.0485		151.3834	151.3834	3.9200e-003		151.4814

3.6 Architectural Coating - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	31.6323					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	31.8368	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

3.6 Architectural Coating - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0572	0.0356	0.3737	1.1400e-003	0.1341	8.3000e-004	0.1350	0.0356	7.7000e-004	0.0363		113.5375	113.5375	2.9400e-003		113.6111
Total	0.0572	0.0356	0.3737	1.1400e-003	0.1341	8.3000e-004	0.1350	0.0356	7.7000e-004	0.0363		113.5375	113.5375	2.9400e-003		113.6111

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	31.6323					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	31.8368	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

3.6 Architectural Coating - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0572	0.0356	0.3737	1.1400e-003	0.1341	8.3000e-004	0.1350	0.0356	7.7000e-004	0.0363		113.5375	113.5375	2.9400e-003		113.6111
Total	0.0572	0.0356	0.3737	1.1400e-003	0.1341	8.3000e-004	0.1350	0.0356	7.7000e-004	0.0363		113.5375	113.5375	2.9400e-003		113.6111

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4297	2.7769	6.4855	0.0297	2.5803	0.0184	2.5987	0.6904	0.0171	0.7076		3,029.173 1	3,029.173 1	0.1256		3,032.313 9
Unmitigated	0.4297	2.7769	6.4855	0.0297	2.5803	0.0184	2.5987	0.6904	0.0171	0.7076		3,029.173 1	3,029.173 1	0.1256		3,032.313 9

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	200.29	0.00	0.00	864,451	864,451
Gasoline/Service Station	0.00	0.00	0.00		
General Office Building	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	200.29	0.00	0.00	864,451	864,451

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	16.60	8.40	6.90	100.00	0.00	0.00	100	0	0
Gasoline/Service Station	16.60	8.40	6.90	100.00	0.00	0.00	100	0	0
General Office Building	16.60	8.40	6.90	100.00	0.00	0.00	100	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.555935	0.035798	0.180985	0.113549	0.015175	0.004939	0.018497	0.064736	0.001364	0.001528	0.005807	0.000803	0.000884
Gasoline/Service Station	0.555935	0.035798	0.180985	0.113549	0.015175	0.004939	0.018497	0.064736	0.001364	0.001528	0.005807	0.000803	0.000884
General Office Building	0.555935	0.035798	0.180985	0.113549	0.015175	0.004939	0.018497	0.064736	0.001364	0.001528	0.005807	0.000803	0.000884
Parking Lot	0.555935	0.035798	0.180985	0.113549	0.015175	0.004939	0.018497	0.064736	0.001364	0.001528	0.005807	0.000803	0.000884

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0518	0.4710	0.3956	2.8300e-003		0.0358	0.0358		0.0358	0.0358		565.1523	565.1523	0.0108	0.0104	568.5107
NaturalGas Unmitigated	0.0518	0.4710	0.3956	2.8300e-003		0.0358	0.0358		0.0358	0.0358		565.1523	565.1523	0.0108	0.0104	568.5107

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

5.2 Energy by Land Use - NaturalGas**Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	3016.59	0.0325	0.2957	0.2484	1.7700e-003		0.0225	0.0225		0.0225	0.0225		354.8924	354.8924	6.8000e-003	6.5100e-003	357.0013
Gasoline/Service Station	1665.18	0.0180	0.1633	0.1371	9.8000e-004		0.0124	0.0124		0.0124	0.0124		195.9034	195.9034	3.7500e-003	3.5900e-003	197.0676
General Office Building	122.03	1.3200e-003	0.0120	0.0101	7.0000e-005		9.1000e-004	9.1000e-004		9.1000e-004	9.1000e-004		14.3565	14.3565	2.8000e-004	2.6000e-004	14.4418
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0518	0.4710	0.3956	2.8200e-003		0.0358	0.0358		0.0358	0.0358		565.1523	565.1523	0.0108	0.0104	568.5107

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

5.2 Energy by Land Use - NaturalGas**Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	3.01659	0.0325	0.2957	0.2484	1.7700e-003		0.0225	0.0225		0.0225	0.0225		354.8924	354.8924	6.8000e-003	6.5100e-003	357.0013
Gasoline/Service Station	1.66518	0.0180	0.1633	0.1371	9.8000e-004		0.0124	0.0124		0.0124	0.0124		195.9034	195.9034	3.7500e-003	3.5900e-003	197.0676
General Office Building	0.12203	1.3200e-003	0.0120	0.0101	7.0000e-005		9.1000e-004	9.1000e-004		9.1000e-004	9.1000e-004		14.3565	14.3565	2.8000e-004	2.6000e-004	14.4418
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0518	0.4710	0.3956	2.8200e-003		0.0358	0.0358		0.0358	0.0358		565.1523	565.1523	0.0108	0.0104	568.5107

6.0 Area Detail**6.1 Mitigation Measures Area**

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.5041	1.9000e-004	0.0211	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0452	0.0452	1.2000e-004		0.0482
Unmitigated	1.5041	1.9000e-004	0.0211	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0452	0.0452	1.2000e-004		0.0482

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1733					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3288					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.9500e-003	1.9000e-004	0.0211	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0452	0.0452	1.2000e-004		0.0482
Total	1.5041	1.9000e-004	0.0211	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0452	0.0452	1.2000e-004		0.0482

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

6.2 Area by SubCategory**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1733					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3288					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.9500e-003	1.9000e-004	0.0211	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0452	0.0452	1.2000e-004		0.0482
Total	1.5041	1.9000e-004	0.0211	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0452	0.0452	1.2000e-004		0.0482

7.0 Water Detail**7.1 Mitigation Measures Water****8.0 Waste Detail****8.1 Mitigation Measures Waste****9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment**Fire Pumps and Emergency Generators**

West Valley Connector O&M Facility - San Bernardino-South Coast County, Winter

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

West Valley Connector O&M Facility - San Bernardino-South Coast County, Annual

West Valley Connector O&M Facility
San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	12.84	1000sqft	0.00	12,836.00	0
Parking Lot	155.00	Space	0.00	93,821.00	0
Automobile Care Center	33.89	1000sqft	5.16	33,889.00	0
Gasoline/Service Station	5.00	Pump	0.00	18,707.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	32
Climate Zone	10			Operational Year	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

West Valley Connector O&M Facility - San Bernardino-South Coast County, Annual

Project Characteristics -

Land Use - Total building area = 65,432 square feet. Total required lot acreage = 5.16 acres. (O&M Facility Needs Assessment Report)

Construction Phase - Construction duration is approximately 12 months.

Trips and VMT - Even number trips reflect round trips.

Demolition - Conservatively assume maximum possible demolition.

Grading - Excavation will generate maximum of 800 CY material export. (DSA+ISA Quantities Sheet).

Vehicle Trips - All operational trips are associated with employees.

Construction Off-road Equipment Mitigation - Compliance with SCAQMD Rule 403.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	230.00	210.00
tblGrading	MaterialExported	0.00	800.00
tblLandUse	LandUseSquareFeet	12,840.00	12,836.00
tblLandUse	LandUseSquareFeet	62,000.00	93,821.00
tblLandUse	LandUseSquareFeet	33,890.00	33,889.00
tblLandUse	LandUseSquareFeet	705.87	18,707.00
tblLandUse	LotAcreage	0.29	0.00
tblLandUse	LotAcreage	1.39	0.00
tblLandUse	LotAcreage	0.78	5.16
tblLandUse	LotAcreage	0.02	0.00
tblTripsAndVMT	HaulingTripNumber	971.00	972.00
tblTripsAndVMT	WorkerTripNumber	15.00	16.00
tblTripsAndVMT	WorkerTripNumber	15.00	16.00
tblTripsAndVMT	WorkerTripNumber	15.00	16.00
tblVehicleTrips	CC_TTP	48.00	0.00

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tblVehicleTrips	CC_TTP	79.00	0.00
tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TTP	33.00	100.00
tblVehicleTrips	CW_TTP	2.00	100.00
tblVehicleTrips	CW_TTP	33.00	100.00
tblVehicleTrips	DV_TP	51.00	0.00
tblVehicleTrips	DV_TP	27.00	0.00
tblVehicleTrips	DV_TP	19.00	0.00
tblVehicleTrips	PB_TP	28.00	0.00
tblVehicleTrips	PB_TP	59.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PR_TP	21.00	100.00
tblVehicleTrips	PR_TP	14.00	100.00
tblVehicleTrips	PR_TP	77.00	100.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	168.56	0.00
tblVehicleTrips	ST_TR	2.46	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	168.56	0.00
tblVehicleTrips	SU_TR	1.05	0.00
tblVehicleTrips	WD_TR	23.72	5.91
tblVehicleTrips	WD_TR	168.56	0.00
tblVehicleTrips	WD_TR	11.03	0.00

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2.0 Emissions Summary**2.1 Overall Construction****Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.6075	2.7473	2.6413	5.7700e-003	0.2736	0.1207	0.3942	0.0774	0.1130	0.1905	0.0000	512.1599	512.1599	0.0960	0.0000	514.5590
Maximum	0.6075	2.7473	2.6413	5.7700e-003	0.2736	0.1207	0.3942	0.0774	0.1130	0.1905	0.0000	512.1599	512.1599	0.0960	0.0000	514.5590

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.6075	2.7473	2.6413	5.7700e-003	0.1695	0.1207	0.2902	0.0472	0.1130	0.1602	0.0000	512.1594	512.1594	0.0960	0.0000	514.5586
Maximum	0.6075	2.7473	2.6413	5.7700e-003	0.1695	0.1207	0.2902	0.0472	0.1130	0.1602	0.0000	512.1594	512.1594	0.0960	0.0000	514.5586

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	38.04	0.00	26.40	39.06	0.00	15.88	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-3-2022	4-2-2022	0.9054	0.9054
2	4-3-2022	7-2-2022	0.6570	0.6570
3	7-3-2022	9-30-2022	0.6498	0.6498
		Highest	0.9054	0.9054

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2744	2.0000e-005	2.6400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.1300e-003	5.1300e-003	1.0000e-005	0.0000	5.4700e-003
Energy	9.4500e-003	0.0860	0.0722	5.2000e-004		6.5300e-003	6.5300e-003		6.5300e-003	6.5300e-003	0.0000	313.0610	313.0610	0.0109	3.5900e-003	314.4022
Mobile	0.0551	0.3695	0.8765	3.9200e-003	0.3292	2.3800e-003	0.3316	0.0882	2.2200e-003	0.0904	0.0000	363.5220	363.5220	0.0147	0.0000	363.8896
Waste						0.0000	0.0000		0.0000	0.0000	29.2490	0.0000	29.2490	1.7286	0.0000	72.4631
Water						0.0000	0.0000		0.0000	0.0000	1.7566	34.9843	36.7410	0.1819	4.5600e-003	42.6461
Total	0.3390	0.4555	0.9513	4.4400e-003	0.3292	8.9200e-003	0.3381	0.0882	8.7600e-003	0.0970	31.0056	711.5724	742.5780	1.9360	8.1500e-003	793.4065

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2.2 Overall Operational**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2744	2.0000e-005	2.6400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.1300e-003	5.1300e-003	1.0000e-005	0.0000	5.4700e-003
Energy	9.4500e-003	0.0860	0.0722	5.2000e-004		6.5300e-003	6.5300e-003		6.5300e-003	6.5300e-003	0.0000	313.0610	313.0610	0.0109	3.5900e-003	314.4022
Mobile	0.0551	0.3695	0.8765	3.9200e-003	0.3292	2.3800e-003	0.3316	0.0882	2.2200e-003	0.0904	0.0000	363.5220	363.5220	0.0147	0.0000	363.8896
Waste						0.0000	0.0000		0.0000	0.0000	29.2490	0.0000	29.2490	1.7286	0.0000	72.4631
Water						0.0000	0.0000		0.0000	0.0000	1.7566	34.9843	36.7410	0.1819	4.5600e-003	42.6461
Total	0.3390	0.4555	0.9513	4.4400e-003	0.3292	8.9200e-003	0.3381	0.0882	8.7600e-003	0.0970	31.0056	711.5724	742.5780	1.9360	8.1500e-003	793.4065

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

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Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/3/2022	2/11/2022	5	30	
2	Grading	Grading	2/12/2022	3/11/2022	5	20	
3	Building Construction	Building Construction	3/12/2022	12/30/2022	5	210	
4	Paving	Paving	12/5/2022	12/30/2022	5	20	
5	Architectural Coating	Architectural Coating	12/5/2022	12/30/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 98,148; Non-Residential Outdoor: 32,716; Striped Parking Area: 5,629 (Architectural Coating – sqft)

OffRoad Equipment

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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	16.00	0.00	972.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	16.00	0.00	100.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	60.00	26.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	16.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	12.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

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3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1050	0.0000	0.1050	0.0159	0.0000	0.0159	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0396	0.3858	0.3089	5.8000e-004		0.0186	0.0186		0.0173	0.0173	0.0000	50.9853	50.9853	0.0143	0.0000	51.3434
Total	0.0396	0.3858	0.3089	5.8000e-004	0.1050	0.0186	0.1237	0.0159	0.0173	0.0332	0.0000	50.9853	50.9853	0.0143	0.0000	51.3434

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3.2 Demolition - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7800e-003	0.1039	0.0177	3.7000e-004	8.3600e-003	2.6000e-004	8.6300e-003	2.3000e-003	2.5000e-004	2.5500e-003	0.0000	35.5775	35.5775	1.9800e-003	0.0000	35.6269
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0300e-003	7.5000e-004	7.8400e-003	2.0000e-005	2.6300e-003	2.0000e-005	2.6500e-003	7.0000e-004	2.0000e-005	7.1000e-004	0.0000	2.1051	2.1051	5.0000e-005	0.0000	2.1064
Total	3.8100e-003	0.1047	0.0255	3.9000e-004	0.0110	2.8000e-004	0.0113	3.0000e-003	2.7000e-004	3.2600e-003	0.0000	37.6825	37.6825	2.0300e-003	0.0000	37.7333

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0410	0.0000	0.0410	6.2000e-003	0.0000	6.2000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0396	0.3858	0.3089	5.8000e-004		0.0186	0.0186		0.0173	0.0173	0.0000	50.9853	50.9853	0.0143	0.0000	51.3433
Total	0.0396	0.3858	0.3089	5.8000e-004	0.0410	0.0186	0.0596	6.2000e-003	0.0173	0.0235	0.0000	50.9853	50.9853	0.0143	0.0000	51.3433

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3.2 Demolition - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7800e-003	0.1039	0.0177	3.7000e-004	8.3600e-003	2.6000e-004	8.6300e-003	2.3000e-003	2.5000e-004	2.5500e-003	0.0000	35.5775	35.5775	1.9800e-003	0.0000	35.6269
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0300e-003	7.5000e-004	7.8400e-003	2.0000e-005	2.6300e-003	2.0000e-005	2.6500e-003	7.0000e-004	2.0000e-005	7.1000e-004	0.0000	2.1051	2.1051	5.0000e-005	0.0000	2.1064
Total	3.8100e-003	0.1047	0.0255	3.9000e-004	0.0110	2.8000e-004	0.0113	3.0000e-003	2.7000e-004	3.2600e-003	0.0000	37.6825	37.6825	2.0300e-003	0.0000	37.7333

3.3 Grading - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0656	0.0000	0.0656	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0195	0.2086	0.1527	3.0000e-004		9.4100e-003	9.4100e-003		8.6600e-003	8.6600e-003	0.0000	26.0548	26.0548	8.4300e-003	0.0000	26.2654
Total	0.0195	0.2086	0.1527	3.0000e-004	0.0656	9.4100e-003	0.0750	0.0337	8.6600e-003	0.0423	0.0000	26.0548	26.0548	8.4300e-003	0.0000	26.2654

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3.3 Grading - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.9000e-004	0.0107	1.8200e-003	4.0000e-005	8.6000e-004	3.0000e-005	8.9000e-004	2.4000e-004	3.0000e-005	2.6000e-004	0.0000	3.6602	3.6602	2.0000e-004	0.0000	3.6653
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	5.0000e-004	5.2300e-003	2.0000e-005	1.7500e-003	1.0000e-005	1.7700e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.4034	1.4034	4.0000e-005	0.0000	1.4043
Total	9.8000e-004	0.0112	7.0500e-003	6.0000e-005	2.6100e-003	4.0000e-005	2.6600e-003	7.1000e-004	4.0000e-005	7.4000e-004	0.0000	5.0636	5.0636	2.4000e-004	0.0000	5.0696

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0256	0.0000	0.0256	0.0131	0.0000	0.0131	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0195	0.2086	0.1527	3.0000e-004		9.4100e-003	9.4100e-003		8.6600e-003	8.6600e-003	0.0000	26.0547	26.0547	8.4300e-003	0.0000	26.2654
Total	0.0195	0.2086	0.1527	3.0000e-004	0.0256	9.4100e-003	0.0350	0.0131	8.6600e-003	0.0218	0.0000	26.0547	26.0547	8.4300e-003	0.0000	26.2654

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3.3 Grading - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.9000e-004	0.0107	1.8200e-003	4.0000e-005	8.6000e-004	3.0000e-005	8.9000e-004	2.4000e-004	3.0000e-005	2.6000e-004	0.0000	3.6602	3.6602	2.0000e-004	0.0000	3.6653
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	5.0000e-004	5.2300e-003	2.0000e-005	1.7500e-003	1.0000e-005	1.7700e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.4034	1.4034	4.0000e-005	0.0000	1.4043
Total	9.8000e-004	0.0112	7.0500e-003	6.0000e-005	2.6100e-003	4.0000e-005	2.6600e-003	7.1000e-004	4.0000e-005	7.4000e-004	0.0000	5.0636	5.0636	2.4000e-004	0.0000	5.0696

3.4 Building Construction - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1792	1.6396	1.7182	2.8300e-003		0.0850	0.0850		0.0799	0.0799	0.0000	243.3115	243.3115	0.0583	0.0000	244.7688
Total	0.1792	1.6396	1.7182	2.8300e-003		0.0850	0.0850		0.0799	0.0799	0.0000	243.3115	243.3115	0.0583	0.0000	244.7688

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3.4 Building Construction - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.7500e-003	0.2515	0.0500	7.2000e-004	0.0172	3.8000e-004	0.0176	4.9700e-003	3.7000e-004	5.3300e-003	0.0000	68.7672	68.7672	4.5100e-003	0.0000	68.8800
Worker	0.0271	0.0197	0.2059	6.1000e-004	0.0691	4.4000e-004	0.0695	0.0184	4.0000e-004	0.0188	0.0000	55.2582	55.2582	1.4400e-003	0.0000	55.2942
Total	0.0339	0.2712	0.2559	1.3300e-003	0.0863	8.2000e-004	0.0871	0.0233	7.7000e-004	0.0241	0.0000	124.0254	124.0254	5.9500e-003	0.0000	124.1741

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1792	1.6396	1.7182	2.8300e-003		0.0850	0.0850		0.0799	0.0799	0.0000	243.3112	243.3112	0.0583	0.0000	244.7685
Total	0.1792	1.6396	1.7182	2.8300e-003		0.0850	0.0850		0.0799	0.0799	0.0000	243.3112	243.3112	0.0583	0.0000	244.7685

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3.4 Building Construction - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.7500e-003	0.2515	0.0500	7.2000e-004	0.0172	3.8000e-004	0.0176	4.9700e-003	3.7000e-004	5.3300e-003	0.0000	68.7672	68.7672	4.5100e-003	0.0000	68.8800
Worker	0.0271	0.0197	0.2059	6.1000e-004	0.0691	4.4000e-004	0.0695	0.0184	4.0000e-004	0.0188	0.0000	55.2582	55.2582	1.4400e-003	0.0000	55.2942
Total	0.0339	0.2712	0.2559	1.3300e-003	0.0863	8.2000e-004	0.0871	0.0233	7.7000e-004	0.0241	0.0000	124.0254	124.0254	5.9500e-003	0.0000	124.1741

3.5 Paving - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0276	20.0276	6.4800e-003	0.0000	20.1895
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0276	20.0276	6.4800e-003	0.0000	20.1895

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3.5 Paving - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	5.0000e-004	5.2300e-003	2.0000e-005	1.7500e-003	1.0000e-005	1.7700e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.4034	1.4034	4.0000e-005	0.0000	1.4043
Total	6.9000e-004	5.0000e-004	5.2300e-003	2.0000e-005	1.7500e-003	1.0000e-005	1.7700e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.4034	1.4034	4.0000e-005	0.0000	1.4043

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0275	20.0275	6.4800e-003	0.0000	20.1895
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0275	20.0275	6.4800e-003	0.0000	20.1895

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3.5 Paving - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.9000e-004	5.0000e-004	5.2300e-003	2.0000e-005	1.7500e-003	1.0000e-005	1.7700e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.4034	1.4034	4.0000e-005	0.0000	1.4043
Total	6.9000e-004	5.0000e-004	5.2300e-003	2.0000e-005	1.7500e-003	1.0000e-005	1.7700e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.4034	1.4034	4.0000e-005	0.0000	1.4043

3.6 Architectural Coating - 2022**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3163					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	0.3184	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574

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3.6 Architectural Coating - 2022**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.8000e-004	3.9200e-003	1.0000e-005	1.3200e-003	1.0000e-005	1.3200e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.0525	1.0525	3.0000e-005	0.0000	1.0532
Total	5.2000e-004	3.8000e-004	3.9200e-003	1.0000e-005	1.3200e-003	1.0000e-005	1.3200e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.0525	1.0525	3.0000e-005	0.0000	1.0532

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3163					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	0.3184	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574

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3.6 Architectural Coating - 2022**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.8000e-004	3.9200e-003	1.0000e-005	1.3200e-003	1.0000e-005	1.3200e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.0525	1.0525	3.0000e-005	0.0000	1.0532
Total	5.2000e-004	3.8000e-004	3.9200e-003	1.0000e-005	1.3200e-003	1.0000e-005	1.3200e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.0525	1.0525	3.0000e-005	0.0000	1.0532

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0551	0.3695	0.8765	3.9200e-003	0.3292	2.3800e-003	0.3316	0.0882	2.2200e-003	0.0904	0.0000	363.5220	363.5220	0.0147	0.0000	363.8896
Unmitigated	0.0551	0.3695	0.8765	3.9200e-003	0.3292	2.3800e-003	0.3316	0.0882	2.2200e-003	0.0904	0.0000	363.5220	363.5220	0.0147	0.0000	363.8896

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	200.29	0.00	0.00	864,451	864,451
Gasoline/Service Station	0.00	0.00	0.00		
General Office Building	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	200.29	0.00	0.00	864,451	864,451

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	16.60	8.40	6.90	100.00	0.00	0.00	100	0	0
Gasoline/Service Station	16.60	8.40	6.90	100.00	0.00	0.00	100	0	0
General Office Building	16.60	8.40	6.90	100.00	0.00	0.00	100	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

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Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.555935	0.035798	0.180985	0.113549	0.015175	0.004939	0.018497	0.064736	0.001364	0.001528	0.005807	0.000803	0.000884
Gasoline/Service Station	0.555935	0.035798	0.180985	0.113549	0.015175	0.004939	0.018497	0.064736	0.001364	0.001528	0.005807	0.000803	0.000884
General Office Building	0.555935	0.035798	0.180985	0.113549	0.015175	0.004939	0.018497	0.064736	0.001364	0.001528	0.005807	0.000803	0.000884
Parking Lot	0.555935	0.035798	0.180985	0.113549	0.015175	0.004939	0.018497	0.064736	0.001364	0.001528	0.005807	0.000803	0.000884

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	219.4937	219.4937	9.0600e-003	1.8700e-003	220.2789
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	219.4937	219.4937	9.0600e-003	1.8700e-003	220.2789
NaturalGas Mitigated	9.4500e-003	0.0860	0.0722	5.2000e-004		6.5300e-003	6.5300e-003		6.5300e-003	6.5300e-003	0.0000	93.5673	93.5673	1.7900e-003	1.7200e-003	94.1233
NaturalGas Unmitigated	9.4500e-003	0.0860	0.0722	5.2000e-004		6.5300e-003	6.5300e-003		6.5300e-003	6.5300e-003	0.0000	93.5673	93.5673	1.7900e-003	1.7200e-003	94.1233

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5.2 Energy by Land Use - NaturalGas**Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	1.10105e+006	5.9400e-003	0.0540	0.0453	3.2000e-004		4.1000e-003	4.1000e-003		4.1000e-003	4.1000e-003	0.0000	58.7564	58.7564	1.1300e-003	1.0800e-003	59.1056
Gasoline/Service Station	607790	3.2800e-003	0.0298	0.0250	1.8000e-004		2.2600e-003	2.2600e-003		2.2600e-003	2.2600e-003	0.0000	32.4340	32.4340	6.2000e-004	5.9000e-004	32.6268
General Office Building	44540.9	2.4000e-004	2.1800e-003	1.8300e-003	1.0000e-005		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004	0.0000	2.3769	2.3769	5.0000e-005	4.0000e-005	2.3910
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		9.4600e-003	0.0859	0.0722	5.1000e-004		6.5300e-003	6.5300e-003		6.5300e-003	6.5300e-003	0.0000	93.5673	93.5673	1.8000e-003	1.7100e-003	94.1233

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5.2 Energy by Land Use - NaturalGas**Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	1.10105e+006	5.9400e-003	0.0540	0.0453	3.2000e-004		4.1000e-003	4.1000e-003		4.1000e-003	4.1000e-003	0.0000	58.7564	58.7564	1.1300e-003	1.0800e-003	59.1056
Gasoline/Service Station	607790	3.2800e-003	0.0298	0.0250	1.8000e-004		2.2600e-003	2.2600e-003		2.2600e-003	2.2600e-003	0.0000	32.4340	32.4340	6.2000e-004	5.9000e-004	32.6268
General Office Building	44540.9	2.4000e-004	2.1800e-003	1.8300e-003	1.0000e-005		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004	0.0000	2.3769	2.3769	5.0000e-005	4.0000e-005	2.3910
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		9.4600e-003	0.0859	0.0722	5.1000e-004		6.5300e-003	6.5300e-003		6.5300e-003	6.5300e-003	0.0000	93.5673	93.5673	1.8000e-003	1.7100e-003	94.1233

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5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	343973	109.5973	4.5200e-003	9.4000e-004	109.9894
Gasoline/Service Station	189876	60.4986	2.5000e-003	5.2000e-004	60.7150
General Office Building	122199	38.9351	1.6100e-003	3.3000e-004	39.0744
Parking Lot	32837.3	10.4627	4.3000e-004	9.0000e-005	10.5001
Total		219.4937	9.0600e-003	1.8800e-003	220.2789

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5.3 Energy by Land Use - Electricity**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	343973	109.5973	4.5200e-003	9.4000e-004	109.9894
Gasoline/Service Station	189876	60.4986	2.5000e-003	5.2000e-004	60.7150
General Office Building	122199	38.9351	1.6100e-003	3.3000e-004	39.0744
Parking Lot	32837.3	10.4627	4.3000e-004	9.0000e-005	10.5001
Total		219.4937	9.0600e-003	1.8800e-003	220.2789

6.0 Area Detail**6.1 Mitigation Measures Area**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2744	2.0000e-005	2.6400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.1300e-003	5.1300e-003	1.0000e-005	0.0000	5.4700e-003
Unmitigated	0.2744	2.0000e-005	2.6400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.1300e-003	5.1300e-003	1.0000e-005	0.0000	5.4700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0316					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2425					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.4000e-004	2.0000e-005	2.6400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.1300e-003	5.1300e-003	1.0000e-005	0.0000	5.4700e-003
Total	0.2744	2.0000e-005	2.6400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.1300e-003	5.1300e-003	1.0000e-005	0.0000	5.4700e-003

West Valley Connector O&M Facility - San Bernardino-South Coast County, Annual

6.2 Area by SubCategory**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0316					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2425					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.4000e-004	2.0000e-005	2.6400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.1300e-003	5.1300e-003	1.0000e-005	0.0000	5.4700e-003
Total	0.2744	2.0000e-005	2.6400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.1300e-003	5.1300e-003	1.0000e-005	0.0000	5.4700e-003

7.0 Water Detail**7.1 Mitigation Measures Water**

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	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	36.7410	0.1819	4.5600e-003	42.6461
Unmitigated	36.7410	0.1819	4.5600e-003	42.6461

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	3.18841 / 1.95419	21.1571	0.1047	2.6300e-003	24.5576
Gasoline/Service Station	0.0664094 / 0.0407026	0.4407	2.1800e-003	5.0000e-005	0.5115
General Office Building	2.2821 / 1.39871	15.1432	0.0750	1.8800e-003	17.5771
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		36.7410	0.1819	4.5600e-003	42.6461

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7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	3.18841 / 1.95419	21.1571	0.1047	2.6300e-003	24.5576
Gasoline/Service Station	0.0664094 / 0.0407026	0.4407	2.1800e-003	5.0000e-005	0.5115
General Office Building	2.2821 / 1.39871	15.1432	0.0750	1.8800e-003	17.5771
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		36.7410	0.1819	4.5600e-003	42.6461

8.0 Waste Detail**8.1 Mitigation Measures Waste**

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Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	29.2490	1.7286	0.0000	72.4631
Unmitigated	29.2490	1.7286	0.0000	72.4631

8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	129.46	26.2792	1.5531	0.0000	65.1056
Gasoline/Service Station	2.69	0.5461	0.0323	0.0000	1.3528
General Office Building	11.94	2.4237	0.1432	0.0000	6.0046
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		29.2490	1.7286	0.0000	72.4631

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8.2 Waste by Land Use**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	129.46	26.2792	1.5531	0.0000	65.1056
Gasoline/Service Station	2.69	0.5461	0.0323	0.0000	1.3528
General Office Building	11.94	2.4237	0.1432	0.0000	6.0046
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		29.2490	1.7286	0.0000	72.4631

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

West Valley Connector O&M Facility - San Bernardino-South Coast County, Annual

Equipment Type	Number
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11.0 Vegetation

O Facility Operation GHG Emissions - Energy Sources

Project NG Use		Natural Gas Emissions Factors from CalEEMod (lbs/MMBTU)		
		CO2	CH4	N2O
495,280,000 BTU/Yr			117.647	0.002
495.28 MMBTU/Yr			58,268.24	1.117
	Pounds/Yr		26.430	0.001
	Metric Tons/Yr			0.000
	CO2e		0.013	0.144
	Total MTCO2e		26.59	
Project Electricity Use		Electricity Emissions Factors from CalEEMod (lbs/MWh)		
		CO2	CH4	N2O
224,201 kWh/Yr			702.44	0.029
224.201 MWh/Yr			157,487.75	6.502
	Pounds/Yr		71.435	0.003
	Metric Tons/Yr			0.001
	CO2e		0.074	0.182
	Total MTCO2e		71.69	
Water-Related Electricity Use		Electricity Emissions Factors from CalEEMod (lbs/MWh)		
		CO2	CH4	N2O
1,337,832 gal/Yr			702.44	0.029
1.338 MG/Yr			12,236.44	0.51
	Pounds/Yr		5.550	0.000
13,021 kWh/MG	Metric Tons/Yr			0.000
13.021 MWh/MG	CO2e		0.006	0.014
17.42 MWh/Yr	Total MTCO2e		5.57	

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> WVC Project - Alternative A														
Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	PM2.5 (lbs/day)	PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.84	8.01	6.91	1.41	0.41	1.00	0.60	0.39	0.21	0.01	1,262.33	0.19	0.01	1,270.63
Grading/Excavation	0.70	7.72	6.15	1.35	0.35	1.00	0.52	0.31	0.21	0.01	1,244.13	0.33	0.01	1,256.39
Drainage/Utilities/Sub-Grade	0.86	7.04	7.52	1.50	0.50	1.00	0.67	0.46	0.21	0.01	1,009.16	0.27	0.01	1,018.93
Paving	1.11	10.62	9.55	0.53	0.53	0.00	0.50	0.50	0.00	0.02	1,666.28	0.37	0.02	1,680.27
Maximum (pounds/day)	1.11	10.62	9.55	1.50	0.53	1.00	0.67	0.50	0.21	0.02	1,666.28	0.37	0.02	1,680.27
Total (tons/construction project)	0.11	1.05	0.95	0.17	0.06	0.11	0.08	0.05	0.02	0.00	161.97	0.04	0.00	163.45
Notes: Project Start Year -> 2021														
Project Length (months) -> 12														
Total Project Area (acres) -> 5														
Maximum Area Disturbed/Day (acres) -> 0														
Water Truck Used? -> Yes														
Total Material Imported/Exported Volume (yd³/day)														
Daily VMT (miles/day)														
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck								
Grubbing/Land Clearing	20	0	1	0	100	10								
Grading/Excavation	60	0	18	0	100	10								
Drainage/Utilities/Sub-Grade	20	0	1	0	100	10								
Paving	20	20	1	6	100	10								
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
Total Emission Estimates by Phase for -> WVC Project - Alternative A														
Project Phases	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM2.5 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
(Tons for all except CO2e. Metric tonnes for CO2e)														
Grubbing/Land Clearing	0.01	0.11	0.09	0.02	0.01	0.01	0.01	0.01	0.00	0.00	16.66	0.00	0.00	15.22
Grading/Excavation	0.04	0.41	0.32	0.07	0.02	0.05	0.03	0.02	0.01	0.00	65.69	0.02	0.00	60.18
Drainage/Utilities/Sub-Grade	0.04	0.33	0.35	0.07	0.02	0.05	0.03	0.02	0.01	0.00	46.62	0.01	0.00	42.71
Paving	0.02	0.21	0.19	0.01	0.01	0.00	0.01	0.01	0.00	0.00	32.99	0.01	0.00	30.18
Maximum (tons/phase)	0.04	0.41	0.35	0.07	0.02	0.05	0.03	0.02	0.01	0.00	65.69	0.02	0.00	60.18
Total (tons/construction project)	0.11	1.05	0.95	0.17	0.06	0.11	0.08	0.05	0.02	0.00	161.97	0.04	0.00	148.28
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
The CO2e emissions are reported as metric tons per phase.														

Road Construction Emissions Model

Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

Version 8.1.0



To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

Input Type

Project Name

Construction Start Year

Project Type

Project Construction Time

Working Days per Month

Predominant Soil/Site Type: Enter 1, 2, or 3
(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)

Project Length

Total Project Area

Maximum Area Disturbed/Day

Water Trucks Used?

WVC Project - Alternative A									
2021									
4									
12.00									
22.00									
1									
33.50									
4.90									
0.10									
1									

Enter a Year between 2014 and 2025 (inclusive)

1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway
2) Road Widening : Project to add a new lane to an existing roadway
3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane
4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction

months
days (assume 22 if unknown)

1) Sand Gravel : Use for quaternary deposits (Delta/West County)
2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta)
3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblinks below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cos/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (ydf) (assume 20 if unknown)	Import Volume (ydf/day)	Export Volume (ydf/day)
Soil	Grubbing/Land Clearing	20.00		20.00
	Grading/Excavation	20.00		60.00
	Drainage/Utilities/Sub-Grade	20.00		20.00
	Paving	20.00		20.00
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving	20.00	20.00	

Mitigation Options

On-road Fleet Emissions Mitigation

Off-road Equipment Emissions Mitigation

Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (<http://www.airquality.org/ceqa/mitigation.shtml>).
Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		1.20		1/1/2021
Grading/Excavation		4.80		2/7/2021
Drainage/Utilities/Sub-Grade		4.20		7/3/2021
Paving		1.80		11/8/2021
Totals (Months)	12			

Program Calculated Activity Fraction
start date end date
1/1/2021 2/8/2021
2/7/2021 7/2/2021
7/3/2021 11/7/2021
11/8/2021 1/1/2022

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT					
User Input											
Miles/round trip: Grubbing/Land Clearing		1.00			1	1.00					
Miles/round trip: Grading/Excavation		6.00			3	18.00					
Miles/round trip: Drainage/Utilities/Sub-Grade		1.00			1	1.00					
Miles/round trip: Paving		1.00			1	1.00					
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Grading/Excavation (grams/mile)		0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Draining/Utilities/Sub-Grade (grams/mile)		0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Paving (grams/mile)		0.07	0.37	1.43	0.10	0.04	0.01	1,559.22	0.00	0.05	1,574.58
Hauling Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e

Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	3.44	0.00	0.00	3.47
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.05
Pounds per day - Grading/Excavation	0.00	0.01	0.06	0.00	0.00	0.00	61.89	0.00	0.00	62.50
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	3.27	0.00	0.00	3.30
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	3.44	0.00	0.00	3.47
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.16
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	3.44	0.00	0.00	3.47
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.07
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	3.54	0.00	0.00	3.57

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT					
User Input											
Miles/round trip: Grubbing/Land Clearing					0	0.00					
Miles/round trip: Grading/Excavation					0	0.00					
Miles/round trip: Drainage/Utilities/Sub-Grade					0	0.00					
Miles/round trip: Paving		6.00			1	6.00					
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Grading/Excavation (grams/mile)		0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Draining/Utilities/Sub-Grade (grams/mile)		0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Paving (grams/mile)		0.07	0.37	1.43	0.10	0.04	0.01	1,559.22	0.00	0.05	1,574.58
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving		0.00	0.00	0.02	0.00	0.00	0.00	20.62	0.00	0.00	20.83
Tons per const. Period - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.00	0.00	0.41
Total tons per construction project		0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.00	0.00	0.41

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions		User Override of Worker Commute Default Values	Default Values								
User Input											
Miles/ one-way trip	10			Calculated Daily Trips		Calculated Daily VMT					
One-way trips/day	2										
No. of employees: Grubbing/Land Clearing	5			10		100.00					
No. of employees: Grading/Excavation	5			10		100.00					
No. of employees: Drainage/Utilities/Sub-Grade	5			10		100.00					
No. of employees: Paving	5			10		100.00					
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Grubbing/Land Clearing (grams/mile)	0.02	0.99	0.10	0.05	0.02	0.00	360.03	0.01	0.00	361.48	
Grading/Excavation (grams/mile)	0.02	0.99	0.10	0.05	0.02	0.00	360.03	0.01	0.00	361.48	
Draining/Utilities/Sub-Grade (grams/mile)	0.02	0.99	0.10	0.05	0.02	0.00	360.03	0.01	0.00	361.48	
Paving (grams/mile)	0.02	0.99	0.10	0.05	0.02	0.00	359.66	0.01	0.00	361.10	
Grubbing/Land Clearing (grams/trip)	0.93	2.28	0.18	0.00	0.00	0.00	81.88	0.01	0.01	84.35	
Grading/Excavation (grams/trip)	0.93	2.28	0.18	0.00	0.00	0.00	81.88	0.01	0.01	84.35	
Draining/Utilities/Sub-Grade (grams/trip)	0.93	2.28	0.18	0.00	0.00	0.00	81.88	0.01	0.01	84.35	
Paving (grams/trip)	0.93	2.28	0.18	0.00	0.00	0.00	81.81	0.01	0.01	84.27	
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Pounds per day - Grubbing/Land Clearing	0.02	0.27	0.03	0.01	0.00	0.00	81.18	0.00	0.00	81.55	
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	1.07	0.00	0.00	1.08	
Pounds per day - Grading/Excavation	0.02	0.27	0.03	0.01	0.00	0.00	81.18	0.00	0.00	81.55	
Tons per const. Period - Grading/Excavation	0.00	0.01	0.00	0.00	0.00	0.00	4.29	0.00	0.00	4.31	
Pounds per day - Drainage/Utilities/Sub-Grade	0.02	0.27	0.03	0.01	0.00	0.00	81.18	0.00	0.00	81.55	
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.01	0.00	0.00	0.00	0.00	3.75	0.00	0.00	3.77	
Pounds per day - Paving	0.02	0.27	0.03	0.01	0.00	0.00	81.09	0.00	0.00	81.47	
Tons per const. Period - Paving	0.00	0.01	0.00	0.00	0.00	0.00	1.61	0.00	0.00	1.61	
Total tons per construction project	0.00	0.04	0.00	0.00	0.00	0.00	10.71	0.00	0.00	10.76	

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions		User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Miles Traveled/Vehicle/Day	Default Values Miles Traveled/Vehicle/Day	Calculated Daily VMT					
User Input											
Grubbing/Land Clearing - Exhaust	1			10.00		10.00					
Grading/Excavation - Exhaust	1			10.00		10.00					
Drainage/Utilities/Subgrade	1			10.00		10.00					
Paving	1			10.00		10.00					
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Grubbing/Land Clearing (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93	
Grading/Excavation (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93	
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93	
Paving (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.22	0.00	0.05	1,574.58	
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Pounds per day - Grubbing/Land Clearing	0.00	0.01	0.03	0.00	0.00	0.00	34.38	0.00	0.00	34.72	
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.46	
Pounds per day - Grading/Excavation	0.00	0.01	0.03	0.00	0.00	0.00	34.38	0.00	0.00	34.72	
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	1.82	0.00	0.00	1.83	
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.01	0.03	0.00	0.00	0.00	34.38	0.00	0.00	34.72	
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	1.59	0.00	0.00	1.60	
Pounds per day - Paving	0.00	0.01	0.03	0.00	0.00	0.00	34.37	0.00	0.00	34.71	
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.00	0.00	0.69	
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	4.54	0.00	0.00	4.58	

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust		User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing	0.10			1.00	0.01	0.21	0.00
Fugitive Dust - Grading/Excavation	0.10			1.00	0.05	0.21	0.01
Fugitive Dust - Drainage/Utilities/Subgrade	0.10			1.00	0.05	0.21	0.01

Values in cells D183 through D216, D234 through D267, D285 through D318, and D336 through D369 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions														
Grubbing/Land Clearing	Default	Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Number of Vehicles	Override of												
	Override of Default Number of Vehicles	Program-estimate	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Concrete/Industrial Saws	0.38	3.67	3.04	0.17	0.17	0.01	592.67	0.03	0.00	594.85
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Forklifts	0.13	1.17	1.18	0.08	0.08	0.00	148.03	0.05	0.00	149.63
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Signal Boards	0.11	0.60	0.72	0.03	0.03	0.00	98.63	0.01	0.00	99.13
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.28	1.92	0.11	0.10	0.00	304.00	0.10	0.00	307.27
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment					ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					0.82	7.73	6.85	0.40	0.38	0.01	1,143.33	0.19	0.01	1,150.88
					0.01	0.10	0.09	0.01	0.01	0.00	15.09	0.00	0.00	15.19

Grading/Excavation	Default		Mitigation Option		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default											
			Equipment Tier	Type										
Override of Default Number of Vehicles			Program-estimate		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Model Default Tier	Excavators	0.24	3.38	2.22	0.11	0.10	0.01	516.02	0.17	0.00
1.00				Model Default Tier	Forklifts	0.13	1.17	1.18	0.08	0.08	0.00	148.03	0.05	0.00
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Model Default Tier	Signal Boards	0.11	0.60	0.72	0.03	0.03	0.00	98.63	0.01	0.00
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.28	1.92	0.11	0.10	0.00	304.00	0.10	0.00
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment														
Number of Vehicles		Equipment Tier		Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					0.67	7.43	6.03	0.33	0.31	0.01	1,066.68	0.32	0.01	1,077.62
					0.04	0.39	0.32	0.02	0.02	0.00	56.32	0.02	0.00	56.90

Drainage/Utilities/Subgrade	Default	Mitigation Option		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Number of Vehicles	Override of	Default										
	Override of Default Number of Vehicles	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier										
	Program-estimate			pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Forklifts	0.13	1.17	1.18	0.08	0.08	0.00	148.03	0.05	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Signal Boards	0.11	0.60	0.72	0.03	0.03	0.00	98.63	0.01	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.28	1.92	0.11	0.10	0.00	304.00	0.10	0.00
1.00			Model Default Tier	Trenchers	0.40	2.71	3.65	0.26	0.24	0.00	339.50	0.11	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment				If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab									
	Number of Vehicles		Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O
	0.00		N/A		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
	0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage/Utilities/Sub-Grade			pounds per day	0.83	6.76	7.46	0.49	0.45	0.01	890.16	0.27	0.01
	Drainage/Utilities/Sub-Grade			tons per phase	0.04	0.31	0.34	0.02	0.02	0.00	41.13	0.01	0.00

Paving	Default		Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Number of Vehicles	Override of	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)												
	Override of Default Number of Vehicles	Program-estimate		Equipment Tier											
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Model Default Tier	Air Compressors	0.29	2.42	2.03	0.12	0.12	0.00	375.26	0.03	0.00	376.75
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Model Default Tier	Cement and Mortar Mixers	0.06	0.31	0.37	0.01	0.01	0.00	50.52	0.01	0.00	50.77
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Model Default Tier	Pavers	0.24	2.81	2.50	0.12	0.11	0.00	441.07	0.14	0.00	445.82
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Model Default Tier	Rollers	0.19	1.90	1.94	0.12	0.11	0.00	257.27	0.08	0.00	260.04
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00				Model Default Tier	Signal Boards	0.11	0.60	0.72	0.03	0.03	0.00	98.63	0.01	0.00	99.13
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00				Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.28	1.91	0.11	0.10	0.00	304.01	0.10	0.00	307.29
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment															
	Number of Vehicles	If non-default vehicles are used, please provide information in "Non-default Off-road Equipment" tab				ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	0.00		Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Paving		pounds per day		1.08	10.33	9.47	0.52	0.49	0.02	1,526.75	0.37	0.01	1,539.79
		Paving		tons per phase		0.02	0.20	0.19	0.01	0.01	0.00	30.23	0.01	0.00	30.49
Total Emissions all Phases (tons per construction period) =>						0.11	1.01	0.94	0.06	0.05	0.00	142.77	0.04	0.00	144.12

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day	Horsepower Load Factor adj	
Aerial Lifts		63		8	63.00	0.31
Air Compressors		78		8	78.00	0.48
Bore/Drill Rigs		206		8	206.00	0.50
Cement and Mortar Mixers		9		8	9.00	0.56
Concrete/Industrial Saws		81		8	81.00	0.73
Cranes		226		8	226.00	0.29
Crawler Tractors		208		8	208.00	0.43
Crushing/Proc. Equipment		85		8	85.00	0.78
Excavators		163		8	163.00	0.38
Forklifts		89		8	89.00	0.20
Generator Sets		84		8	84.00	0.74
Graders		175		8	175.00	0.41
Off-Highway Tractors		123		8	123.00	0.44
Off-Highway Trucks		400		8	400.00	0.38
Other Construction Equipment		172		8	172.00	0.42
Other General Industrial Equipment		88		8	88.00	0.34
Other Material Handling Equipment		167		8	167.00	0.40
Pavers		126		8	126.00	0.42

Paving Equipment		131		8	131.00	0.36
Plate Compactors		8		8	8.00	0.43
Pressure Washers		13		8	13.00	0.30
Pumps		84		8	84.00	0.74
Rollers		81		8	81.00	0.38
Rough Terrain Forklifts		100		8	100.00	0.40
Rubber Tired Dozers		255		8	255.00	0.40
Rubber Tired Loaders		200		8	200.00	0.36
Scrapers		362		8	362.00	0.48
Signal Boards		6		8	6.00	0.82
Skid Steer Loaders		65		8	65.00	0.37
Surfacing Equipment		254		8	254.00	0.30
Sweepers/Scrubbers		64		8	64.00	0.46
Tractors/Loaders/Backhoes		98		8	98.00	0.37
Trenchers		81		8	81.00	0.50
Welders		46		8	46.00	0.45

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> WVC Project - Alternative A														
Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	2.53	24.02	20.74	4.23	1.23	3.00	1.79	1.16	0.62	0.04	3,786.98	0.58	0.04	3,811.89
Grading/Excavation	2.10	23.16	18.45	4.05	1.05	3.00	1.57	0.94	0.62	0.04	3,732.40	0.98	0.04	3,769.17
Drainage/Utilities/Sub-Grade	2.57	21.11	22.56	4.51	1.51	3.00	2.00	1.37	0.62	0.03	3,027.47	0.80	0.03	3,056.78
Paving	3.33	31.85	28.64	1.60	1.60	0.00	1.49	1.49	0.00	0.05	4,998.85	1.10	0.05	5,040.82
Maximum (pounds/day)	3.33	31.85	28.64	4.51	1.60	3.00	2.00	1.49	0.62	0.05	4,998.85	1.10	0.05	5,040.82
Total (tons/construction project)	0.33	3.15	2.86	0.51	0.17	0.34	0.23	0.16	0.07	0.01	485.90	0.12	0.01	490.36
Notes: Project Start Year -> 2021														
Project Length (months) -> 12														
Total Project Area (acres) -> 5														
Maximum Area Disturbed/Day (acres) -> 0														
Water Truck Used? -> Yes														
		Total Material Imported/Exported Volume (yd³/day)		Daily VMT (miles/day)										
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck								
Grubbing/Land Clearing	60	0	3	0	300	30								
Grading/Excavation	180	0	54	0	300	30								
Drainage/Utilities/Sub-Grade	60	0	3	0	300	30								
Paving	60	60	3	18	300	30								
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
Total Emission Estimates by Phase for -> WVC Project - Alternative A														
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM2.5 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.03	0.32	0.27	0.06	0.02	0.04	0.02	0.02	0.01	0.00	49.99	0.01	0.00	45.65
Grading/Excavation	0.11	1.22	0.97	0.21	0.06	0.16	0.08	0.05	0.03	0.00	197.07	0.05	0.00	180.54
Drainage/Utilities/Sub-Grade	0.12	0.98	1.04	0.21	0.07	0.14	0.09	0.06	0.03	0.00	139.87	0.04	0.00	128.12
Paving	0.07	0.63	0.57	0.03	0.03	0.00	0.03	0.03	0.00	0.00	98.98	0.02	0.00	90.55
Maximum (tons/phase)	0.12	1.22	1.04	0.21	0.07	0.16	0.09	0.06	0.03	0.00	197.07	0.05	0.00	180.54
Total (tons/construction project)	0.33	3.15	2.86	0.51	0.17	0.34	0.23	0.16	0.07	0.01	485.90	0.12	0.01	444.85
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
The CO2e emissions are reported as metric tons per phase.														

Road Construction Emissions Model

Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

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To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

Input Type

Project Name

Construction Start Year

Project Type

Project Construction Time

Working Days per Month

Predominant Soil/Site Type: Enter 1, 2, or 3
(for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)

Project Length

Total Project Area

Maximum Area Disturbed/Day

Water Trucks Used?

WVC Project - Alternative A		
2021		Enter a Year between 2014 and 2025 (inclusive)
4		1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
12.00		months
22.00		days (assume 22 if unknown)
1		1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
33.50		miles
4.90		acres
0.30		acres
1		1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblinks below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd ³) (assume 20 if unknown)	Import Volume (yd ³ /day)	Export Volume (yd ³ /day)
Soil	Grubbing/Land Clearing	20.00		60.00
	Grading/Excavation	20.00		180.00
	Drainage/Utilities/Sub-Grade	20.00		60.00
	Paving	20.00		60.00
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving	20.00	60.00	

Mitigation Options

On-road Fleet Emissions Mitigation	
Off-road Equipment Emissions Mitigation	

Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (<http://www.airquality.org/ceqa/mitigation.shtml>).
Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

Grubbing/Lan	Months
Grading/Exca	1.20
Drainage/Utili	4.80
Paving	4.20
	1.80

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		1.20		1/1/2021
Grading/Excavation		4.80		2/7/2021
Drainage/Utilities/Sub-Grade		4.20		7/3/2021
Paving		1.80		11/8/2021
Totals (Months)	12			

Program Calculated Activity	Frac
start date	end date
1/1/2021	2/8/2021
2/7/2021	7/2/2021
7/3/2021	11/7/2021
11/8/2021	1/1/2022

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT				
User Input										
Miles/round trip: Grubbing/Land Clearing	1.00			3	3.00					
Miles/round trip: Grading/Excavation	6.00			9	54.00					
Miles/round trip: Drainage/Utilities/Sub-Grade	1.00			3	3.00					
Miles/round trip: Paving	1.00			3	3.00					
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Grading/Excavation (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Paving (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.22	0.00	0.05	1,574.58
Hauling Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e

Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	10.31	0.00	0.00	10.42
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.14
Pounds per day - Grading/Excavation	0.01	0.04	0.17	0.01	0.00	0.00	185.67	0.00	0.01	187.50
Tons per const. Period - Grading/Excavation	0.00	0.00	0.01	0.00	0.00	0.00	9.80	0.00	0.00	9.90
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	10.31	0.00	0.00	10.42
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.48
Pounds per day - Paving	0.00	0.00	0.01	0.00	0.00	0.00	10.31	0.00	0.00	10.41
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.21
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	10.62	0.00	0.00	10.72

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT					
User Input											
Miles/round trip: Grubbing/Land Clearing					0	0.00					
Miles/round trip: Grading/Excavation					0	0.00					
Miles/round trip: Drainage/Utilities/Sub-Grade					0	0.00					
Miles/round trip: Paving		6.00			3	18.00					
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Grading/Excavation (grams/mile)		0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Draining/Utilities/Sub-Grade (grams/mile)		0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Paving (grams/mile)		0.07	0.37	1.43	0.10	0.04	0.01	1,559.22	0.00	0.05	1,574.58
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving		0.00	0.01	0.06	0.00	0.00	0.00	61.87	0.00	0.00	62.48
Tons per const. Period - Paving		0.00	0.00	0.00	0.00	0.00	0.00	1.23	0.00	0.00	1.24
Total tons per construction project		0.00	0.00	0.00	0.00	0.00	0.00	1.23	0.00	0.00	1.24

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions		User Override of Worker Commute Default Values	Default Values								
User Input											
Miles/one-way trip	10			Calculated Daily Trips		Calculated Daily VMT					
One-way trips/day	2										
No. of employees: Grubbing/Land Clearing	15			30		300.00					
No. of employees: Grading/Excavation	15			30		300.00					
No. of employees: Drainage/Utilities/Sub-Grade	15			30		300.00					
No. of employees: Paving	15			30		300.00					
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Grubbing/Land Clearing (grams/mile)	0.02	0.99	0.10	0.05	0.02	0.00	360.03	0.01	0.00	361.48	
Grading/Excavation (grams/mile)	0.02	0.99	0.10	0.05	0.02	0.00	360.03	0.01	0.00	361.48	
Draining/Utilities/Sub-Grade (grams/mile)	0.02	0.99	0.10	0.05	0.02	0.00	360.03	0.01	0.00	361.48	
Paving (grams/mile)	0.02	0.99	0.10	0.05	0.02	0.00	359.66	0.01	0.00	361.10	
Grubbing/Land Clearing (grams/trip)	0.93	2.28	0.18	0.00	0.00	0.00	81.88	0.01	0.01	84.35	
Grading/Excavation (grams/trip)	0.93	2.28	0.18	0.00	0.00	0.00	81.88	0.01	0.01	84.35	
Draining/Utilities/Sub-Grade (grams/trip)	0.93	2.28	0.18	0.00	0.00	0.00	81.88	0.01	0.01	84.35	
Paving (grams/trip)	0.93	2.28	0.18	0.00	0.00	0.00	81.81	0.01	0.01	84.27	
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Pounds per day - Grubbing/Land Clearing	0.07	0.81	0.08	0.03	0.01	0.00	243.54	0.01	0.00	244.66	
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	3.21	0.00	0.00	3.23	
Pounds per day - Grading/Excavation	0.07	0.81	0.08	0.03	0.01	0.00	243.54	0.01	0.00	244.66	
Tons per const. Period - Grading/Excavation	0.00	0.04	0.00	0.00	0.00	0.00	12.86	0.00	0.00	12.92	
Pounds per day - Drainage/Utilities/Sub-Grade	0.07	0.81	0.08	0.03	0.01	0.00	243.54	0.01	0.00	244.66	
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.04	0.00	0.00	0.00	0.00	11.25	0.00	0.00	11.30	
Pounds per day - Paving	0.07	0.80	0.08	0.03	0.01	0.00	243.28	0.01	0.00	244.40	
Tons per const. Period - Paving	0.00	0.02	0.00	0.00	0.00	0.00	4.82	0.00	0.00	4.84	
Total tons per construction project	0.01	0.11	0.01	0.00	0.00	0.00	32.14	0.00	0.00	32.29	

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions		User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Miles Traveled/Vehicle/Day	Default Values Miles Traveled/Vehicle/Day	Calculated Daily VMT					
User Input											
Grubbing/Land Clearing - Exhaust	3			10.00		30.00					
Grading/Excavation - Exhaust	3			10.00		30.00					
Drainage/Utilities/Subgrade	3			10.00		30.00					
Paving	3			10.00		30.00					
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Grubbing/Land Clearing (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93	
Grading/Excavation (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93	
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93	
Paving (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.22	0.00	0.05	1,574.58	
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Pounds per day - Grubbing/Land Clearing	0.00	0.02	0.09	0.01	0.00	0.00	103.15	0.00	0.00	104.16	
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	1.36	0.00	0.00	1.37	
Pounds per day - Grading/Excavation	0.00	0.02	0.09	0.01	0.00	0.00	103.15	0.00	0.00	104.16	
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	5.45	0.00	0.00	5.50	
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.02	0.09	0.01	0.00	0.00	103.15	0.00	0.00	104.16	
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	4.77	0.00	0.00	4.81	
Pounds per day - Paving	0.00	0.02	0.09	0.01	0.00	0.00	103.12	0.00	0.00	104.14	
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	2.04	0.00	0.00	2.06	
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	13.62	0.00	0.00	13.75	

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust		User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing	0.30			3.00	0.04	0.62	0.01
Fugitive Dust - Grading/Excavation	0.30			3.00	0.16	0.62	0.03
Fugitive Dust - Drainage/Utilities/Subgrade	0.30			3.00	0.14	0.62	0.03

[illegible]

Grading/Excavation	Default		Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type											
Override of Default Number of Vehicles		Program-estimate			pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00				Model Default Tier	Excavators	0.71	10.13	6.66	0.32	0.30	0.02	1,548.06	0.50	0.01	1,564.76
3.00				Model Default Tier	Forklifts	0.39	3.50	3.54	0.25	0.23	0.00	444.09	0.14	0.00	448.88
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00				Model Default Tier	Signal Boards	0.34	1.81	2.16	0.08	0.08	0.00	295.88	0.03	0.00	297.39
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00				Model Default Tier	Tractors/Loaders/Backhoes	0.57	6.85	5.75	0.34	0.31	0.01	912.01	0.29	0.01	921.82
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment															
	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab					ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Number of Vehicles			Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
	0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Grading/Excavation			pounds per day	2.01	22.29	18.10	1.00	0.92	0.03	3,200.05	0.97	0.03	3,232.85
		Grading/Excavation			tons per phase	0.11	1.18	0.96	0.05	0.05	0.00	168.96	0.05	0.00	170.69

Drainage/Utilities/Subgrade	Default	Mitigation Option		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Number of Vehicles	Override of	Default										
	Override of Default Number of Vehicles	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier										
	Program-estimate			pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Model Default Tier	Forklifts	0.39	3.50	3.54	0.25	0.23	0.00	444.09	0.14	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.00			Model Default Tier	Signal Boards	0.34	1.81	2.16	0.08	0.08	0.00	295.88	0.03	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Model Default Tier	Tractors/Loaders/Backhoes	0.57	6.85	5.75	0.34	0.31	0.01	912.01	0.29	0.01
3.00			Model Default Tier	Trenchers	1.19	8.12	10.94	0.79	0.73	0.01	1,018.49	0.33	0.01
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment													
If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab													
Number of Vehicles			Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O
0.00			N/A		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade				pounds per day	2.49	20.28	22.38	1.47	1.36	0.03	2,670.47	0.80	0.02
Drainage/Utilities/Sub-Grade				tons per phase	0.12	0.94	1.03	0.07	0.06	0.00	123.38	0.04	0.00

Paving	Default		Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
	Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type												
Override of Default Number of Vehicles		Program-estimate				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	3.00			Model Default Tier	Air Compressors	0.87	7.27	6.09	0.37	0.37	0.01	1,125.79	0.08	0.01	1,130.24	
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	3.00			Model Default Tier	Cement and Mortar Mixers	0.18	0.93	1.10	0.04	0.04	0.00	151.55	0.02	0.00	152.32	
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	3.00			Model Default Tier	Pavers	0.71	8.44	7.50	0.36	0.33	0.01	1,323.20	0.43	0.01	1,337.46	
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	3.00			Model Default Tier	Rollers	0.57	5.71	5.83	0.36	0.33	0.01	771.80	0.25	0.01	780.11	
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	6.00			Model Default Tier	Signal Boards	0.34	1.81	2.16	0.08	0.08	0.00	295.88	0.03	0.00	297.39	
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	3.00			Model Default Tier	Tractors/Loaders/Backhoes	0.57	6.85	5.72	0.34	0.31	0.01	912.04	0.29	0.01	921.86	
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
User-Defined Off-road Equipment																
Number of Vehicles		If non-default vehicles are used, please provide information in "Non-default Off-road Equipment" tab				ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
0.00		N/A				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		Paving				pounds per day	3.25	31.00	28.40	1.56	1.47	0.05	4,580.26	1.10	0.04	4,619.38
		Paving				tons per phase	0.06	0.61	0.56	0.03	0.03	0.00	90.69	0.02	0.00	91.46
Total Emissions all Phases (tons per construction period) =>						0.32	3.03	2.82	0.17	0.16	0.00	428.30	0.12	0.00	432.36	

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day	Horsepower	Load Factor	adj
Aerial Lifts		63		8	63.00		0.31
Air Compressors		78		8	78.00		0.48
Bore/Drill Rigs		206		8	206.00		0.50
Cement and Mortar Mixers		9		8	9.00		0.56
Concrete/Industrial Saws		81		8	81.00		0.73
Cranes		226		8	226.00		0.29
Crawler Tractors		208		8	208.00		0.43
Crushing/Proc. Equipment		85		8	85.00		0.78
Excavators		163		8	163.00		0.38
Forklifts		89		8	89.00		0.20
Generator Sets		84		8	84.00		0.74
Graders		175		8	175.00		0.41
Off-Highway Tractors		123		8	123.00		0.44
Off-Highway Trucks		400		8	400.00		0.38
Other Construction Equipment		172		8	172.00		0.42
Other General Industrial Equipment		88		8	88.00		0.34
Other Material Handling Equipment		167		8	167.00		0.40
Pavers		126		8	126.00		0.42

Paving Equipment		131		8	131.00	0.36
Plate Compactors		8		8	8.00	0.43
Pressure Washers		13		8	13.00	0.30
Pumps		84		8	84.00	0.74
Rollers		81		8	81.00	0.38
Rough Terrain Forklifts		100		8	100.00	0.40
Rubber Tired Dozers		255		8	255.00	0.40
Rubber Tired Loaders		200		8	200.00	0.36
Scrapers		362		8	362.00	0.48
Signal Boards		6		8	6.00	0.82
Skid Steer Loaders		65		8	65.00	0.37
Surfacing Equipment		254		8	254.00	0.30
Sweepers/Scrubbers		64		8	64.00	0.46
Tractors/Loaders/Backhoes		98		8	98.00	0.37
Trenchers		81		8	81.00	0.50
Welders		46		8	46.00	0.45

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> WVC Project - Alternative B														
Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	Fugitive Dust (lbs/day)	PM2.5 (lbs/day)	Exhaust (lbs/day)	Fugitive Dust (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	5.20	46.65	49.55	28.48	2.48	26.00	7.51	2.10	5.41	0.09	8,835.90	1.83	0.10	8,910.34
Grading/Excavation	6.71	57.29	64.46	29.48	3.48	26.00	8.39	2.98	5.41	0.12	12,021.39	2.61	0.14	12,127.36
Drainage/Utilities/Sub-Grade	6.60	65.34	55.65	29.43	3.43	26.00	8.44	3.03	5.41	0.12	11,505.08	1.75	0.11	11,582.46
Paving	5.17	54.92	41.85	2.63	2.63	0.00	2.27	2.27	0.00	0.11	10,084.00	1.75	0.11	10,159.49
Maximum (pounds/day)	6.71	65.34	64.46	29.48	3.48	26.00	8.44	3.03	5.41	0.12	12,021.39	2.61	0.14	12,127.36
Total (tons/construction project)	1.66	15.49	14.92	6.69	0.85	5.83	1.95	0.74	1.21	0.03	2,965.12	0.55	0.03	2,988.42
Notes: Project Start Year -> 2020														
Project Length (months) -> 24														
Total Project Area (acres) -> 58														
Maximum Area Disturbed/Day (acres) -> 3														
Water Truck Used? -> Yes														
Total Material Imported/Exported Volume (yd³/day)														
Daily VMT (miles/day)														
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck								
Grubbing/Land Clearing	20	0	2	0	3,520	40								
Grading/Excavation	320	0	112	0	4,120	40								
Drainage/Utilities/Sub-Grade	20	0	2	0	3,880	40								
Paving	0	100	0	50	3,720	40								
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
Total Emission Estimates by Phase for -> WVC Project - Alternative B														
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	Fugitive Dust (tons/phase)	PM2.5 (tons/phase)	Exhaust (tons/phase)	Fugitive Dust (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.14	1.23	1.31	0.75	0.07	0.69	0.20	0.06	0.14	0.00	233.27	0.05	0.00	213.40
Grading/Excavation	0.71	6.05	6.81	3.11	0.37	2.75	0.89	0.31	0.57	0.01	1,269.46	0.28	0.01	1,161.80
Drainage/Utilities/Sub-Grade	0.61	6.04	5.14	2.72	0.32	2.40	0.78	0.28	0.50	0.01	1,063.07	0.16	0.01	970.90
Paving	0.20	2.17	1.66	0.10	0.10	0.00	0.09	0.09	0.00	0.00	399.33	0.07	0.00	364.98
Maximum (tons/phase)	0.71	6.05	6.81	3.11	0.37	2.75	0.89	0.31	0.57	0.01	1269.46	0.28	0.01	1,161.80
Total (tons/construction project)	1.66	15.49	14.92	6.69	0.85	5.83	1.95	0.74	1.21	0.03	2965.12	0.55	0.03	2,711.07
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
The CO2e emissions are reported as metric tons per phase.														

Road Construction Emissions Model
Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

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To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.



Input Type

Project Name	WVC Project - Alternative B	
Construction Start Year	2020	Enter a Year between 2014 and 2025 (inclusive)
Project Type	2	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	24.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	33.50	miles
Total Project Area	58.22	acres
Maximum Area Disturbed/Day	2.60	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd ³) (assume 20 if unknown)	Import Volume (yd ³ /day)	Export Volume (yd ³ /day)
Soil	Grubbing/Land Clearing	20.00		20.00
	Grading/Excavation	20.00		320.00
	Drainage/Utilities/Sub-Grade	20.00		20.00
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving	20.00	100.00	

Mitigation Options

On-road Fleet Emissions Mitigation	
Off-road Equipment Emissions Mitigation	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		2.40		1/1/2020
Grading/Excavation		9.60		3/14/2020
Drainage/Utilities/Sub-Grade		8.40		12/31/2020
Paving		3.60		9/13/2021
Totals (Months)	24			

Program Calculated Activity Fraction
start date end date
1/1/2020 3/13/2020
3/14/2020 12/30/2020
12/31/2020 9/12/2021
9/13/2021 12/31/2021

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
User Input						
Miles/round trip: Grubbing/Land Clearing	2.00	30.00		1	2.00	
Miles/round trip: Grading/Excavation	7.00	30.00		16	112.00	
Miles/round trip: Drainage/Utilities/Sub-Grade	2.00	30.00		1	2.00	
Miles/round trip: Paving	2.00	30.00		0	0.00	

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.37	1.46	0.10	0.04	0.01	1,571.31	0.00	0.05	1,586.79
Grading/Excavation (grams/mile)	0.07	0.37	1.46	0.10	0.04	0.01	1,571.31	0.00	0.05	1,586.79
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Paving (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Hauling Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e

Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	6.93	0.00	0.00	7.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.18
Pounds per day - Grading/Excavation	0.02	0.09	0.36	0.03	0.01	0.00	387.98	0.00	0.01	391.81
Tons per const. Period - Grading/Excavation	0.00	0.01	0.04	0.00	0.00	0.00	40.97	0.00	0.00	41.37
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	6.88	0.00	0.00	6.94
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.64	0.00	0.00	0.64
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.04	0.00	0.00	0.00	41.79	0.00	0.00	42.20

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT					
User Input											
Miles/round trip: Grubbing/Land Clearing			30.00		0	0.00					
Miles/round trip: Grading/Excavation			30.00		0	0.00					
Miles/round trip: Drainage/Utilities/Sub-Grade			30.00		0	0.00					
Miles/round trip: Paving		10.00	30.00		5	50.00					
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.07	0.37	1.46	0.10	0.04	0.01	1,571.31	0.00	0.05	1,586.79
Grading/Excavation (grams/mile)		0.07	0.37	1.46	0.10	0.04	0.01	1,571.31	0.00	0.05	1,586.79
Draining/Utilities/Sub-Grade (grams/mile)		0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Paving (grams/mile)		0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving		0.01	0.04	0.16	0.01	0.00	0.00	171.91	0.00	0.01	173.61
Tons per const. Period - Paving		0.00	0.00	0.01	0.00	0.00	0.00	6.81	0.00	0.00	6.87
Total tons per construction project		0.00	0.00	0.01	0.00	0.00	0.00	6.81	0.00	0.00	6.87

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions		User Override of Worker Commute Default Values		Default Values								
User Input												
Miles/one-way trip		20		Calculated Daily Trips		Calculated Daily VMT						
One-way trips/day		2										
No. of employees: Grubbing/Land Clearing		88		176		3,520.00						
No. of employees: Grading/Excavation		103		206		4,120.00						
No. of employees: Drainage/Utilities/Sub-Grade		97		194		3,880.00						
No. of employees: Paving		93		186		3,720.00						
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e		
Grubbing/Land Clearing (grams/mile)	0.02	1.08	0.11	0.05	0.02	0.00	371.46	0.01	0.00	373.08		
Grading/Excavation (grams/mile)	0.02	1.08	0.11	0.05	0.02	0.00	371.46	0.01	0.00	373.08		
Draining/Utilities/Sub-Grade (grams/mile)	0.02	0.99	0.10	0.05	0.02	0.00	360.03	0.01	0.00	361.48		
Paving (grams/mile)	0.02	0.99	0.10	0.05	0.02	0.00	360.03	0.01	0.00	361.48		
Grubbing/Land Clearing (grams/trip)	1.00	2.55	0.20	0.00	0.00	0.00	84.03	0.01	0.01	86.84		
Grading/Excavation (grams/trip)	1.00	2.55	0.20	0.00	0.00	0.00	84.03	0.01	0.01	86.84		
Draining/Utilities/Sub-Grade (grams/trip)	0.93	2.28	0.18	0.00	0.00	0.00	81.88	0.01	0.01	84.35		
Paving (grams/trip)	0.93	2.28	0.18	0.00	0.00	0.00	81.88	0.01	0.01	84.35		
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e		
Pounds per day - Grubbing/Land Clearing	0.55	9.34	0.96	0.36	0.15	0.03	2,915.27	0.07	0.04	2,928.89		
Tons per const. Period - Grubbing/Land Clearing	0.01	0.25	0.03	0.01	0.00	0.00	76.96	0.00	0.00	77.32		
Pounds per day - Grading/Excavation	0.64	10.93	1.12	0.43	0.18	0.03	3,412.19	0.08	0.05	3,428.13		
Tons per const. Period - Grading/Excavation	0.07	1.15	0.12	0.04	0.02	0.00	360.33	0.01	0.00	362.01		
Pounds per day - Drainage/Utilities/Sub-Grade	0.56	9.45	0.94	0.40	0.17	0.03	3,114.71	0.07	0.04	3,128.17		
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.05	0.87	0.09	0.04	0.02	0.00	287.80	0.01	0.00	289.04		
Pounds per day - Paving	0.54	9.06	0.91	0.38	0.16	0.03	2,986.27	0.07	0.04	2,999.17		
Tons per const. Period - Paving	0.02	0.36	0.04	0.02	0.01	0.00	118.26	0.00	0.00	118.77		
Total tons per construction project	0.16	2.63	0.27	0.11	0.04	0.01	843.35	0.02	0.01	847.14		

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions		User Override of Default # Water Trucks		Program Estimate of Number of Water Trucks		User Override of Truck Miles Traveled/Vehicle/Day		Default Values Miles Traveled/Vehicle/Day		Calculated Daily VMT		
User Input												
Grubbing/Land Clearing - Exhaust		2		1		20.00		40.00		40.00		
Grading/Excavation - Exhaust		2		1		20.00		40.00		40.00		
Drainage/Utilities/Subgrade		2		1		20.00		40.00		40.00		
Paving		2		1		20.00		40.00		40.00		
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e		
Grubbing/Land Clearing (grams/mile)	0.07	0.37	1.46	0.10	0.04	0.01	1,571.31	0.00	0.05	1,586.79		
Grading/Excavation (grams/mile)	0.07	0.37	1.46	0.10	0.04	0.01	1,571.31	0.00	0.05	1,586.79		
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93		
Paving (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93		
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e		
Pounds per day - Grubbing/Land Clearing	0.01	0.03	0.13	0.01	0.00	0.00	138.57	0.00	0.00	139.93		
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	3.66	0.00	0.00	3.69		
Pounds per day - Grading/Excavation	0.01	0.03	0.13	0.01	0.00	0.00	138.57	0.00	0.00	139.93		
Tons per const. Period - Grading/Excavation	0.00	0.00	0.01	0.00	0.00	0.00	14.63	0.00	0.00	14.78		
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.03	0.13	0.01	0.00	0.00	137.53	0.00	0.00	138.89		
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	12.71	0.00	0.00	12.83		
Pounds per day - Paving	0.01	0.03	0.13	0.01	0.00	0.00	137.53	0.00	0.00	138.89		
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	5.45	0.00	0.00	5.50		
Total tons per construction project	0.00	0.01	0.03	0.00	0.00	0.00	36.44	0.00	0.00	36.80		

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust		User Override of Max Acreage Disturbed/Day		Default Maximum Acreage/Day		PM10 pounds/day		PM10 tons/per period		PM2.5 pounds/day		PM2.5 tons/per period	
Fugitive Dust - Grubbing/Land Clearing				2.60		26.00		0.69		5.41		0.14	
Fugitive Dust - Grading/Excavation				2.60		26.00		2.75		5.41		0.57	
Fugitive Dust - Drainage/Utilities/Subgrade				2.60		26.00		2.40		5.41		0.50	

Grading/Excavation	Default		Mitigation Option		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
	Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default	Type											
Override of Default Number of Vehicles		Program-estimate		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	0			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2.00	1			Model Default Tier	Crawler Tractors	1.14	4.91	14.61	0.55	0.51	0.02	1,492.08	0.48	0.01	1,508.17
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4.00	3			Model Default Tier	Excavators	1.01	13.48	9.96	0.48	0.44	0.02	2,063.78	0.67	0.02	2,086.03
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2			Model Default Tier	Graders	1.43	9.16	14.00	0.78	0.72	0.01	1,209.88	0.39	0.01	1,222.88
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2			Model Default Tier	Rollers	0.42	3.83	4.21	0.27	0.25	0.01	514.48	0.17	0.00	520.03
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2.00	1			Model Default Tier	Rubber Tired Loaders	0.74	3.22	8.69	0.29	0.27	0.01	1,192.43	0.39	0.01	1,205.31
0.00	2			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8.00	67			Model Default Tier	Signal Boards	0.46	2.41	2.88	0.11	0.11	0.01	394.51	0.04	0.00	396.52
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	4			Model Default Tier	Tractors/Loaders/Backhoes	0.85	9.21	8.51	0.54	0.49	0.01	1,215.48	0.39	0.01	1,228.57
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
User-Defined Off-road Equipment															
If non-default vehicles are used, please provide information in "Non-default Off-road Equipment" tab						ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles		Equipment Tier			Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					0	0.00	0.00	0.00	0.						

Drainage/Utilities/Subgrade	Default		Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
	Number of Vehicles		Override of													
	Override of Default Number of Vehicles		Program-estimate	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)		Equipment Tier	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2.00	1		Model Default Tier	Air Compressors	0.58	4.85	4.07	0.25	0.25	0.01	750.53	0.05	0.01	753.50	
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2.00	1		Model Default Tier	Generator Sets	0.71	7.37	6.33	0.34	0.34	0.01	1,246.07	0.06	0.01	1,250.45	
	2.00	1		Model Default Tier	Graders	1.28	9.01	12.25	0.68	0.63	0.01	1,211.11	0.39	0.01	1,224.13	
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2.00	1		Model Default Tier	Plate Compactors	0.08	0.42	0.50	0.02	0.02	0.00	68.96	0.01	0.00	69.31	
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	2.00	1		Model Default Tier	Pumps	0.76	7.48	6.42	0.36	0.36	0.01	1,246.07	0.07	0.01	1,250.56	
				Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	4.00	1		Model Default Tier	Rough Terrain Forklifts	0.49	9.18	6.45	0.25	0.23	0.01	1,335.08	0.43	0.01	1,349.47	
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	0.00	1		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	10.00	67		Model Default Tier	Signal Boards	0.57	3.01	3.59	0.14	0.14	0.01	493.14	0.05	0.00	495.64	
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	4.00	3		Model Default Tier	Tractors/Loaders/Backhoes	0.76	9.13	7.66	0.45	0.42	0.01	1,216.01	0.39	0.01	1,229.10	
	2.00			Model Default Tier	Trenchers	0.79	5.41	7.29	0.53	0.49	0.01	678.99	0.22	0.01	686.30	
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
User-Defined Off-road Equipment																
If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab						ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Number of Vehicles		Equipment Tier			Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		Drainage/Utilities/Sub-Grade			pounds per day	6.04	55.86	54.57	3.02	2.86	0.09	8,245.96	1.68	0.07	8,308.47	
		Drainage/Utilities/Sub-Grade			tons per phase	0.56	5.16	5.04	0.28	0.26	0.01	761.93	0.16	0.01	767.70	

Paving	Default		Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type											
Override of Default Number of Vehicles		Program-estimate			pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4.00			Model Default Tier	Air Compressors	1.17	9.69	8.14	0.50	0.50	0.02	1,501.06	0.10	0.01	1,507.00
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2.00			Model Default Tier	Cement and Mortar Mixers	0.12	0.62	0.74	0.03	0.03	0.00	101.03	0.01	0.00	101.55
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2.00	1		Model Default Tier	Pavers	0.48	5.63	5.03	0.24	0.22	0.01	882.12	0.29	0.01	891.63
	4.00	1		Model Default Tier	Paving Equipment	0.76	10.09	7.70	0.38	0.35	0.02	1,565.87	0.51	0.01	1,582.77
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4.00	2		Model Default Tier	Rollers	0.77	7.62	7.79	0.48	0.44	0.01	1,029.06	0.33	0.01	1,040.15
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	10.00	67		Model Default Tier	Signal Boards	0.57	3.01	3.59	0.14	0.14	0.01	493.14	0.05	0.00	495.64
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4.00	3		Model Default Tier	Tractors/Loaders/Backhoes	0.76	9.13	7.66	0.45	0.42	0.01	1,216.01	0.39	0.01	1,229.10
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment															
Number of Vehicles		If non-default vehicles are used, please provide information in "Non-default Off-road Equipment" tab				ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Paving			pounds per day	4.62	45.79	40.66	2.22	2.10	0.07	6,788.29	1.68	0.06	6,847.83
		Paving			tons per phase	0.18	1.81	1.61	0.09	0.08	0.00	268.82	0.07	0.00	271.17
Total Emissions all Phases (tons per construction period) =>						1.50	12.84	14.57	0.74	0.69	0.02	2,036.73	0.53	0.02	2,055.40

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day	Horsepower	Load Factor	adj
Aerial Lifts		63		8	63.00		0.31
Air Compressors		78		8	78.00		0.48
Bore/Drill Rigs		206		8	206.00		0.50
Cement and Mortar Mixers		9		8	9.00		0.56
Concrete/Industrial Saws		81		8	81.00		0.73
Cranes		226		8	226.00		0.29
Crawler Tractors		208		8	208.00		0.43
Crushing/Proc. Equipment		85		8	85.00		0.78
Excavators		163		8	163.00		0.38
Forklifts		89		8	89.00		0.20
Generator Sets		84		8	84.00		0.74
Graders		175		8	175.00		0.41
Off-Highway Tractors		123		8	123.00		0.44
Off-Highway Trucks		400		8	400.00		0.38
Other Construction Equipment		172		8	172.00		0.42
Other General Industrial Equipment		88		8	88.00		0.34
Other Material Handling Equipment		167		8	167.00		0.40
Pavers		126		8	126.00		0.42

Paving Equipment		131		8	131.00	0.36
Plate Compactors		8		8	8.00	0.43
Pressure Washers		13		8	13.00	0.30
Pumps		84		8	84.00	0.74
Rollers		81		8	81.00	0.38
Rough Terrain Forklifts		100		8	100.00	0.40
Rubber Tired Dozers		255		8	255.00	0.40
Rubber Tired Loaders		200		8	200.00	0.36
Scrapers		362		8	362.00	0.48
Signal Boards		6		8	6.00	0.82
Skid Steer Loaders		65		8	65.00	0.37
Surfacing Equipment		254		8	254.00	0.30
Sweepers/Scrubbers		64		8	64.00	0.46
Tractors/Loaders/Backhoes		98		8	98.00	0.37
Trenchers		81		8	81.00	0.50
Welders		46		8	46.00	0.45

END OF DATA ENTRY SHEET